"TO STUDY THE THYROID RELATED COMPLAINTS AND THYROID FUNCTION TEST IN PATIENTS OF REPRODUCTIVE AGE WITH A PROVISIONAL DIAGNOSIS OF DYSFUNCTIONAL UTERINE BLEEDING"

Dissertation submitted in partial fulfillment of regulation for the award of M.S., (OBSTETRICS AND GYNAECOLOGY).

THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY
CHENNAI – 600 032.

APRIL 2014

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This is to certify that the dissertation entitled **"TO STUDY THE THYROID RELATED COMPLAINTS AND THYROID FUNCTION TEST IN PATIENTS OF REPRODUCTIVE AGE WITH A PROVISIONAL DIAGNOSIS OF DYSFUNCTIONAL UTERINE BLEEDING"** is a bonafide research work done by **Dr. RAMYA .S** in partial fulfillment of the requirement for the degree of **M.S. Obstetrics and Gynaecology.,** under the guidance of **Dr. K. MURUGALAKSHMI M.D., DGO.,** Asst professor, Department of obstetrics and Gynaecology, Coimbatore Medical College, Coimbatore.

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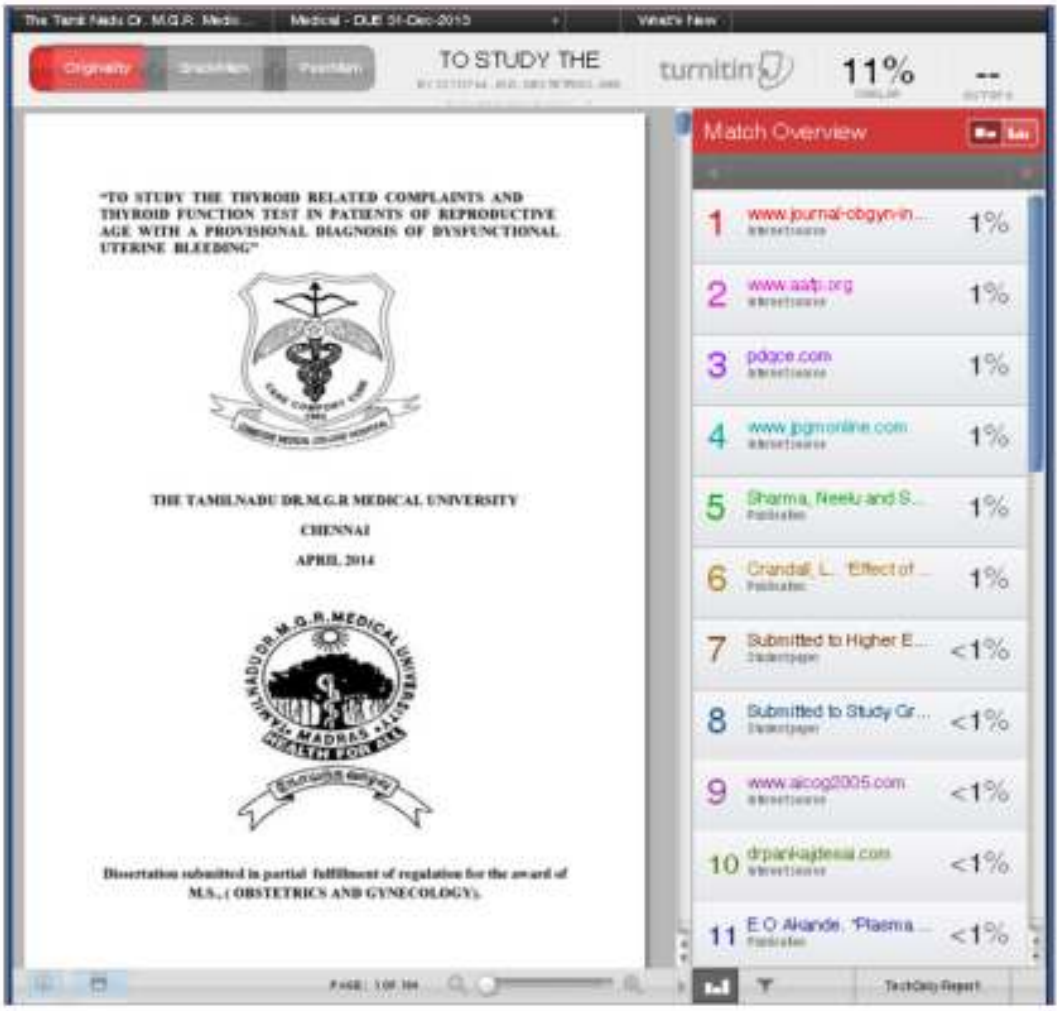
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"TO STUDY THE THYROID RELATED COMPLAINTS AND THYROID FUNCTION TEST IN PATIENTS OF REPRODUCTIVE AGE WITH A PROVISIONAL DIAGNOSIS OF DYSFUNCTIONAL UTERINE BLEEDING" THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY CHENNAI APRIL 2014 Dissertation submitted in partial fulfillment of regulation for the award of M.S., (OBSTETRICS AND GYNECOLOGY). DECLARATION BY THE CANDIDATE I solemnly declare that this dis sertation entitled "to study the thyroid related complaints and thyroid functi on test in patients of reproductive age with a provisional diagnosis of dysfunctional uterine bleeding" is a bonafide and genuine research work carried out by me under the guidance of Dr. SUNDARI P M.D.,DGO., Professor &...

ABSTRACT

BACKGROUND AND OBJECTIVES :

Dysfunctional uterine bleeding is an abnormal bleeding from the uterus in absence of organic disease of genital tract and demonstratable extra-genital cause. Thyroid dysfunction is marked by large number of menstrual aberrations.

This study aimed at detecting thyroid dysfunction and thyroid related complaints in patients with a provisional diagnosis of DUB refer positive cases to physician for further evaluation.

METHODS:

100 cases of clinically diagnosed DUB were taken from obstetrics and gynaecology department Coimbatore medical college hospital Coimbatore tamilnadu.

All patients from puberty tovpremenopausal age groups presenting as menorrhagia, acyclical metropathia, polymenorrhagia, metrorrhagia, oligomenorrhea, polymenorrhea and hypomenorrhea were tested for their thyroid function by T3, T4, TSH estimations in their serum. Patients on hormonal treatment, IUCD users, or had bleeding disorders were excluded from the study.

RESULTS :

23% of patients who were studied had thyroid dysfunction of which 13%of patients had subclinical hypothyroidism, 7% of patients had hypothyroidism and only 3% of patients had hyperthyroidism. The commonest bleeding abnormality in subclinical hypothyroid patients were polymenorrhoea and menorrhagia. All hyperthyroid cases were oligomenorrhoeic. most common symptoms of hypothyroidism are fatigue followed by increased weight gain ,dry skin, cold intolerance.

INTERPRETATION AND CONCLUSION

Both subclinical hypothyroid and profoundly hypothyroid cases together were the commonest thyroid dysfunction and menorrhagia was their commonest menstrual abnormality. So this study concludes that biochemical evaluation of thyroid functioning should be made mandatory in all provisionally diagnosed cases of DUBto detect thyroid dysfunction. Thyroid function tests should also be done in patients presenting with fatigue, weight gain ,lethargy in addition to infertility, delayed puberty and recurrent abortions.

KEY WORDS *:*

Dysfunction Uterine Bleeding (DUB),

Thyroid dysfunction,

Hypothyroidism,

Subclinical hypothyroidism,

Hyperthyroidism

CONTENTS

LIST OF ABBREVIATIONS USED

DUB	-	Dysfunctional Uterine Bleeding
OPD	-	Out Patient Department
T3	-	Triiodothyronine
T4	-	Thyroxine
TSH	-	Thyroid Stimulating Hormone
TBG	-	Thyroxine binding globulin
MIT	-	Mono-iodothyronine
DIT	-	Di -iodothyronine
TRH	-	Thyrotrophin Releasing Hormone
RIA	-	Radio Immuno Assay
LMP	-	Last Menstrual Period
Inter	-	Interval
Dura	-	Duration
Quant	-	Quantity
MPH	-	Metropathia Hemorrhagica
TFT	-	Thyroid Function Tests
TDF	-	Thyroid Dysfunction

LIST OF TABLES

LIST OF GRAPHS

INTRODUCTION

Dysfunctional uterine bleeding is an abnormal bleeding from the uterus in the absence of organic disease of genital tract and demonstrable extra genital cause.[1] DUB accounts for 10% of the gynecology related complaints. Thyroid dysfunction is also marked by large number of menstrual aberrations.

Dysfunctional uterine bleeding (DUB) affects about 5% of menstruating women, yet the majority of medical practitioners who manage the problem do not adequately understand the underlying pathophysiology nor the principles involved in appropriate management.

Both hypo as well as hyperthyroidism are associated with a variety of changes in reproductive function including delayed onset of puberty, anovulatory cycles and abnormally high foetal wastage.[2] Clinical experiences show increased menstrual flow to be the most common reproductive system manifestation of hypothyroidism.

Reproductive failure and lactation failure also preceded thyroid dysfunction or goitre. Reproductive dysfunction may therefore be considered as one of the presenting symptoms of thyroid disorders in women, keeping in mind both menstrual irregularities and lactation

failure may also arise from other common or idiopathic origins. Especially in women with menstrual irregularities in the perimenopausal age if thyroid dysfunction is detected, pharmacotherapy may be a superior alternative to surgical interventions like hysterectomy.

Although the occurrence of menstrual disturbances in hypothyroid woman has been documented, the number of hypothyroid patients originally requiring treatment for menorrhagia has not been carefully elicitated[3] Moreover majority of the cases has subclinical hypothyroidism and easily pass unrecognized. **Danese MD *et al.*** recommend hypothyroidism is frequent enough to warrant consideration in most older woman, justifying screening even in asymptomatic older women.[4]

The introduction of serum thyroxine (T4) and serum thyroid stimulating hormone (TSH) radioimmunoassay has increased the sensitivity and specificity of thyroid function testing. The serum TSH assay has been shown to be a sensitive indicator of diminished thyroid functional reserve, since TSH levels become elevated before circulating serum thyroxine levels fall below the normal range.[5]

Hence this study is to evaluate the thyroid function in patients having abnormal menstrual bleeding from puberty to premenopausal age groups which will be interesting and justifiable and will help in further management of DUB.

AIMS & OBJECTIVES

1) To study the thyroid related complaints in patients with dysfunctional uterine bleeding (reproductive age group) .

2) To evaluate thyroid function test abnormalities in patients with DUB.

REVIEW OF LITERATURE

'The Thyroid Gland' by **Rosalind Pitt Rivers and WR Trotter** in 1964 stated that the effect of thyroid deficiency on ovarian function that is a change in the rhythm of the oestrus cycle, resulting in lengthening or irregularity. **'Chu'** found that unruptured follicular count has increased and the number of ovulations decreased in the ovaries of the rabbits following thyroidectomy. He attributed these changes to an increase in the secretion of FSH and a decrease in that of LH by the pituitary.[6]

Gillmann and **Gilbert** has discussed the possibility of changes in the ovarian function observed in thyroid deficient primates and other animals are due to an alteration in the secretion of pituitary gonadotrophins.[6]

Scott and Mussey in 1964 reported that, incidence of subjective menorrhagia in myxoedema varied from 32 to 80% and menorrhagia may not infrequently be the presenting complaint. In contrast, hyperthyroidism was associated with oligomenorrhea and amenorrhea that are proportionate to severity of thyrotoxicosis. Menorrhagia associated with hypothyroidism responded quickly to thyroxine replacement, often in doses insufficient to correct the other manifestations of this

condition,suggests that thyroxine in some way has direct effect on the spiral arterioles and on haemostasis during menstruation.[7]

A study was done by measuring plasma levels of estrogen by radioimmunoassay for twenty eight consecutive days among 12 healthy euthyroid females and 15 thyrotoxic females- 10 with hypomenorrhea and 5 with amenorrhea.It showed that the menstrual abnormality which occurs in thyrotoxicosis was associated with increased circulating estrogen levels.[8]

Thyrotoxic women having amenorrhea has a markedly increased plasma estrogen levels with a persistent sharp peak of estrogen but without secondary rise seen with corpus luteum function. This suggests that failure of positive feedback effect of estrogen on hypothalamic pituitary axis with resultant failure of ovulation.[8] The marked increase in estradiol levels in thyrotoxicosis may be due to -

i) Increased rate of conversion of testosterone and androstenedione to estrogen.

ii) Increased glandular secretion

iii) Decreased metabolic rate

In another study ,correlation of low platelet adhesiveness and Other hemostatic abnormalities, in Hypothyroidism was noted. This platelet dysfunction in combination with other factors can lead to menorrhagia in hypothyroidism.[9]

Sheldon S. Stoffer, 1982 presented case reports on apparent relationship between menstrual irregularities and minimal thyroid insufficiency was documented by patients dramatic response to levothyroxine treatment. Two cases discontinued levothyroxine therapy and had menstrual abnormalities. The mechanism of menstrual dysfunction observed in patients with minimal thyroid insufficiency is not clear.

Patients with long standing menstrual abnormalities without obvious uterine pathology should be considered for thyroid function testing.[10]

Ivor M.D. Jackson, 1982 stated that thyrotropin releasing hormone was equally effective in stimulating prolactin secretion from the normal pituitary gland although the importance of this hypothalamic releasing factor in the regulation of the pituitary thyroid axis in human beings have to be studied further for understanding physiologic importance.[11] "The incidence of hypothyroidism was shown to be as high

as 44.44% in patients with menstrual disturbances. In this study 18 patients of menstrual abnormalities are taken. Eight patients presenting with menorrhagia are in Group I and 5 cases had hypothyroidism. Hypothyroidism in these patients is due to low TSH levels so symptoms i.e., menorrhagia can be due to low levels of thyroid hormone resulting in decreased metabolism of estrogen and hence relatively increased estrogen levels in blood that caused menorrhagia.

In a study involving 1110 oligomenorrheic patients, eight patients had hypothyroidism with raised TSH levels. So this was explained that in these eight hypothyroid patients thyroid gland was dysfunctional hence inspite of high TSH output,thyroid hormone production is low. Low thyroid hormone production provoked more TSH production. This elevated TSH levels cause increase in prolactin secretion which is responsible for oligomenorrhea.

Group I : Menorrhagia patients with hypothyroidism

Pituitary

↓

*Low TS*H production

↓

Normal thyroid gland

↓

Estrogen metabolism lowered

↓

Raised levels of Estrogen in circulation

↓

Menorrhagia

A history of thyroid disorder in women with amenorrhea hyperprolactinemia syndrome was noted in a case control study. In females with hyper-prolactinemia and anovulation the underlying problem can be hypothyroidism and therefore thyroid function test should be done.[13]

Seventy cases of puberty menorrhagia was studied, it was noted that five patients had hypothyroidism (7.15%) and 3 out of these 5 hypothyroid patients had no other symptoms clinically suggestive of hypothyroidism.

Hypothyroidism is the second common cause of excessive puberty bleeding. Adolescents with hypothyroidism tend to have mild symptoms than adult patients.

When 67 apparently euthyroid menorrhagic women were evaluated with a thyrotropin releasing hormone test, 15 (22%) out of 67 showed "mild primary hypothyroidism" characterized by an elevation of basal TSH level (5.9 MU/L), lowering of serum thyroxine levels (85nmol/l) and exaggerated response of serum TSH and thyroxine to administration of thyrotrophin releasing hormone. The terms 'early' and 'potential' hypothyroidism describe the Preliminary Phase of hypothyroidism. During follow up, menorrhagia disappeared within 3 to 6 months and has not reappeared in 1 to 3 years in all patients with early hypothyroidism treated with L-thyroxine, also improvement in thyroid profile without change in triiodothyronine level noted.[3]

Infrequent or absent ovulation is believed to result in relative estrogen excess (**Goldsmith RE**, ***et al*** 1952). Also these changes may be due to deficient production of luteinizing hormone .The fact that TSH level dropped significantly and the thyroxine levels rise significantly after L-thyroxine administration, with no change in the T3 level supports that

menorrhagia may be an another example that is dependent on thyroxine and not on tri iodothyronine.[3]

This study further proposed that sensitive TSH assay might replace the thyrotropin releasing hormone test. It was also suggested that the terms 'early hypothyroidism 'to describe the condition in patients having symptoms and 'potential hypothyroidism' for those who are asymptomatic.

Dysfunctional uterine bleeding (DUB), defined as abnormal uterine bleeding not caused by pelvic pathology, medications, systemic disease or pregnancy, is the most common cause of abnormal uterine bleeding but remains a diagnosis of exclusion.

A study was conducted on the hormonal profile of oligomenorrheic women. Radio immunoassay of TSH, LH and prolactin were done at intervals i.e., at 1st day, 12thday and 20th day of cycle and T3, T4, TSH were done randomly. This study has shown that prolactin and T3 play most significant role in deciding the FSH, LH levels and sometimes anovulation associated with amenorrhea. The cause of oligomenorrhea which is mostly associated with anovulation is related to either raised prolactin or T3 levels or due to hypothyroidism. Gonadotrophin levels are being regulated by these hormones.[1]

In a study it was showed that 33.3% patients with hypothyroidism had menorrhagia. The mechanism explained was "it seems that poor progesterone production is associated with persistent endometrial proliferation which may be responsible for massive bleeding.[2] Another, mechanism for this may be failure of LH secretion. 44.4% patients with hypothyroidism had oligomenorrhea. This was explained by the galactorrhea amenorrhea syndrome in longstanding hypothyroid patients.

Oligomenorrhea in hyperthyroidism may be due to poor responsiveness to LH or increase in hormone binding globulins producing a decrease in free available estradiol, which in turn may produce menstrual abnormalities. Anovulation in hypothyroidism was found in 77.8%.[2] This anovulation can be explained by secondary pituitary depression in hypothyroid states which results in cyclic loss of LH surge or it may be due to hyperprolactinemia.

Table A :- Relation of thyroid function to type of cycle

Thyroid Profile	Types of Cycles	Percentage %
Hypothyroid	Anovulatory Ovulatory	77.8% 22.2%
Hyperthyroid	Anovulatory Ovulatory	*63.64%* 36.36%

Hyperprolactinemia is an important mechanism for producing anovulatory cycles in hypothyroidism. Mechanism of anovulation in hyperthyroid patients was entirely separate as in this study none of the patients had hyperprolactinemia among the hyperthyroid patients.

In hyperthyroidism there is an increase in testosterone and estradiol binding globulins which causes a decrease in unbound fraction of these hormones which may cause a lack of feedback inhibition of gonadotrophins and thus resulting in an increase in LH, which can partly explain anovulation.

Ross Mc Dougall, 1992 stated that 'there is a clinical impression that hypothyroid patients have a bleeding tendency'.[11] However this is seldom a clinical problem. Several case reports describes hypothyroid patients with a significant bleeding diathesis in whom the underlying cause is not completely defined. The usual finding is similar to Von

Willebrand's disease with low concentration of factor VIII and an inhibitor of coagulation". Treatment with thyroxine corrects the problem.[16]

Blum and Blum, 1992, the relationship between subclinical or early hypothyroidism and menorrhagia in women with intrauterine contraceptive device in situ and that menorrhagia responds to thyroxine therapy.[17]

Hypothyroidism can also be in association with acquired Von Willebrand's Disease leading to menorrhagia which will resolve following treatment of hypothyroidism[19].

In a study of 189 hypothyroid women to find out their menstrual pattern and fertility status. As many as 91 patients(71.09%) had subclinical hypothyroidism; 46.87% had normal menstrual pattern. Menstrual aberrations included mainly, oligomenorrhea, hypomenorrhea, menorrhagia and secondary amenorrhea. Oligomenorrhea was the commonest menstrual abnormality found mainly in early age group females. Menorrhagia was common in later age groups.[21] In this study author has commented that ‘as majority of cases are subclinical, It is essential to evaluate thyroid function in all women with intractable menstrual disorders, infertility and recurrent pregnancy loss [21].

Leon Speroff 1999, explains menstrual irregularities and bleeding problems being common in hypothyroid women. Amenorrhea can be a consequence of hypothyroidism either with TRH induced increase in prolactin or with normal prolactin levels. He explained the involvement of sex hormone binding globulin (SHBG). SHBG is a glycoprotein synthesized in liver and contains a single binding site for androgens and estrogens. Estrogen and thyroxine are stimulatory for its production. Free estradiol levels are increased because of significant decrease in SHBG. The total binding capacity of SHBG will thus influence the amount that is free and unbound. High levels of estrogen and sustained availability leads to prolonged period of amenorrhea followed by acute, often profuse bleeds with excessive loss of blood.[22]

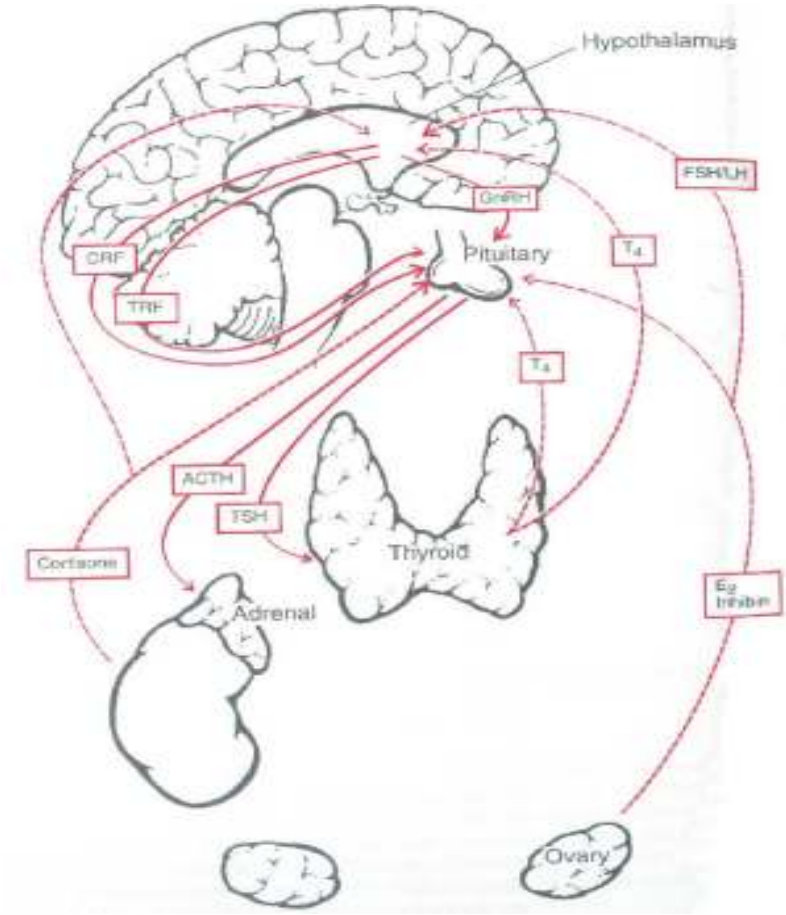
Jeffcoates (2001), mentioned that hypothyroidism tends to cause menorrhagia or polymenorrhea these symptoms being present in 30-40% of cases. Thyroid function should be especially evaluated in cases of menorrhagia. Hypothyroidism and hyperthyroidism can both depress ovarian and menstrual function. The latter never causes amenorrhea unless exophthalmos is present. When hyperthyroidism is associated with amenorrhea, it is necessary to recognize that it may be merely a manifestation of a pituitary fault which is also the cause of menstrual

upset. Hypothyroidism is associated with an increase in thyrotrophin releasing hormone which in turn may be associated with a raised prolactin level and hence amenorrhea.[23]

In a study conducted on 213 patients with DUB, menorrhagia as their chief menstrual abnormality, hypothyroidism was detected in 28.17% of the cases, proliferative endometrium was seen in majority of hypothyroid patients. 78% patients respond to medical line of treatment thereby avoiding hormones or surgical intervention. It was also noted that 45% patients were clinically euthyroid but demonstrated altered biochemical levels while 55% patients had symptoms/signs/both. Easy fatiguability was the commonest symptom.

Novak S., (2002), mentions both hypothyroidism and hyperthyroidism can be associated with abnormal bleeding. With hypothyroidism menstrual disturbances, including menorrhagia are common. Hyperthyroidism can result in oligomenorrhea and amenorrhea and it can also lead to elevated levels of plasma estrogen. Also coagulation abnormalities such as Von-Willebrand's disease can have a variable clinical picture and may escape diagnosis until the re productive years.[25]

Control Of Endocrine Function of Ovaries, thyroid, adrenal glands by Hypothalamus and pituitary



DYSFUNCTIONAL UTERINE BLEEDING (DUB) AND CLASSIFICATION OF DUB

Dysfunctional uterine bleeding is defined by various authors in many ways leading to confusion as to, which are the exact entities which come under this heading.

NOVAK defines it as "bleeding without a causative uterine lesion such as tumor, infection or complications of pregnancy, although frequently there may be associated cysts of the ovary".

SUTHERLAND defines DUB as "Abnormal uterine bleeding which is not explained by any palpable lesions of the reproductive organs".[25]

CROSSEN defines it as "irregular, excessive, scanty or prolonged bleeding of endometrial origin, occuring without neoplasia, infection, pregnancy, blood dyscrasias, trauma or hormone administration".[26,27]

TAYLOR restricts the term DUB to be applied only when all possible causes for, excessive or prolonged bleeding have been excluded. Such as exclusive approach would tend to eliminate from consideration any uterine bleeding for which an etiology has been uncovered.[28]

TELINDE defines DUB as a symptom complex that in absence of pregnancy, neoplasm, infection or intrauterine lesions.[29]

SPEROFF describes DUB variety of bleeding manifestations of anovulatory cycles (in absence of pathology or medical illness).[22]

JEFFCOATES defines it as "excessive, prolonged, unpatterned bleeding from the endometrium unrelated to structural or systemic disease and thus other diagnosis must be excluded.[23]

DEWHURST defines DUB as "abnormal bleeding from the uterus in the absence of organic disease of the genital tract".[1]

DAWN refers it as excessive uterine bleeding where no organic, systemic, hematologic or pelvic cause can be detected.[30]

Two areas of general agreement can be obtained from these sources - first, the necessity to exclude bleeding arising from organic disorders of the reproductive tract in order that an entity may qualify as DUB. Second,that endocrinological abnormalities have a significant relationship to DUB.

Adequate clinical examination of abdomen and pelvis, uterine curettage, hysteroscopy or atleast an endometrial biopsy are essential to exclude organic disease of the uterus. In recurrent severe abnormal uterine bleeding repeat curettage should be done to avoid previously missed organic disease.[1] Hence, a provisional diagnosis of DUB is made clinically.

Table B : - Classification of DUB

Ovular haemorrhage	Anovular haemorrhage
• Irregular ripening of the endometrium • Prolonged ripening or irregular shedding of the endometrium	a) Threshold bleeding b) Metropathia haemorrhagica.

Table C:- CLASSIFICATION OF DUB

The following practical classification of DUB based on etiology and clinical features was put forward by Vorys and Neri (1968).

Type	Cycle	Type bleeding	Cause	
I	Ovulatory	a) Long proliferative phase	1) Long cycles normal bleeding	Slow development of follicle
	i) Follicular abnormality	b) Short proliferative phase	2) Short cycles normal bleeding	Hypersensitivity of ovary
	ii) Corpus luteum abnormality	a) Insufficiency	1) Premature spotting short cycles	Irregular ripening of endometrium
		b) Prolonged	2) Prolonged cycle with prolonged excessive bleeding	Irregular shedding of endometrium
II	Anovulatory	a) Cyclic	Normal cycle excessive bleeding	High peak estrogen levels proliferative endometrium
		b) Acyclic	1) Irregular excessive bleeding	Continuous high estrogen levels hyper plastic endometrium
			2) Irregular scanty Bleeding	Continuous low estrogen levels atrophic endometrium

In 1955 **Jeffcoate** classified the dysfunctional uterine bleeding into ovular and anovular types.[23]

Oligomenorrhea : Infrequent irregular episodes of bleeding, usually occurring at interval of more than 35 days.

Polymenorrhea : Frequent but regular episodes of uterine bleeding usually occurring at intervals of 24 days or less.

Menorrhagia: Uterine bleeding usually excessive and prolonged occurring at regular intervals.

Menometrorhagia : Uterine bleeding usually excessive and prolonged occurring at frequent irregular intervals.

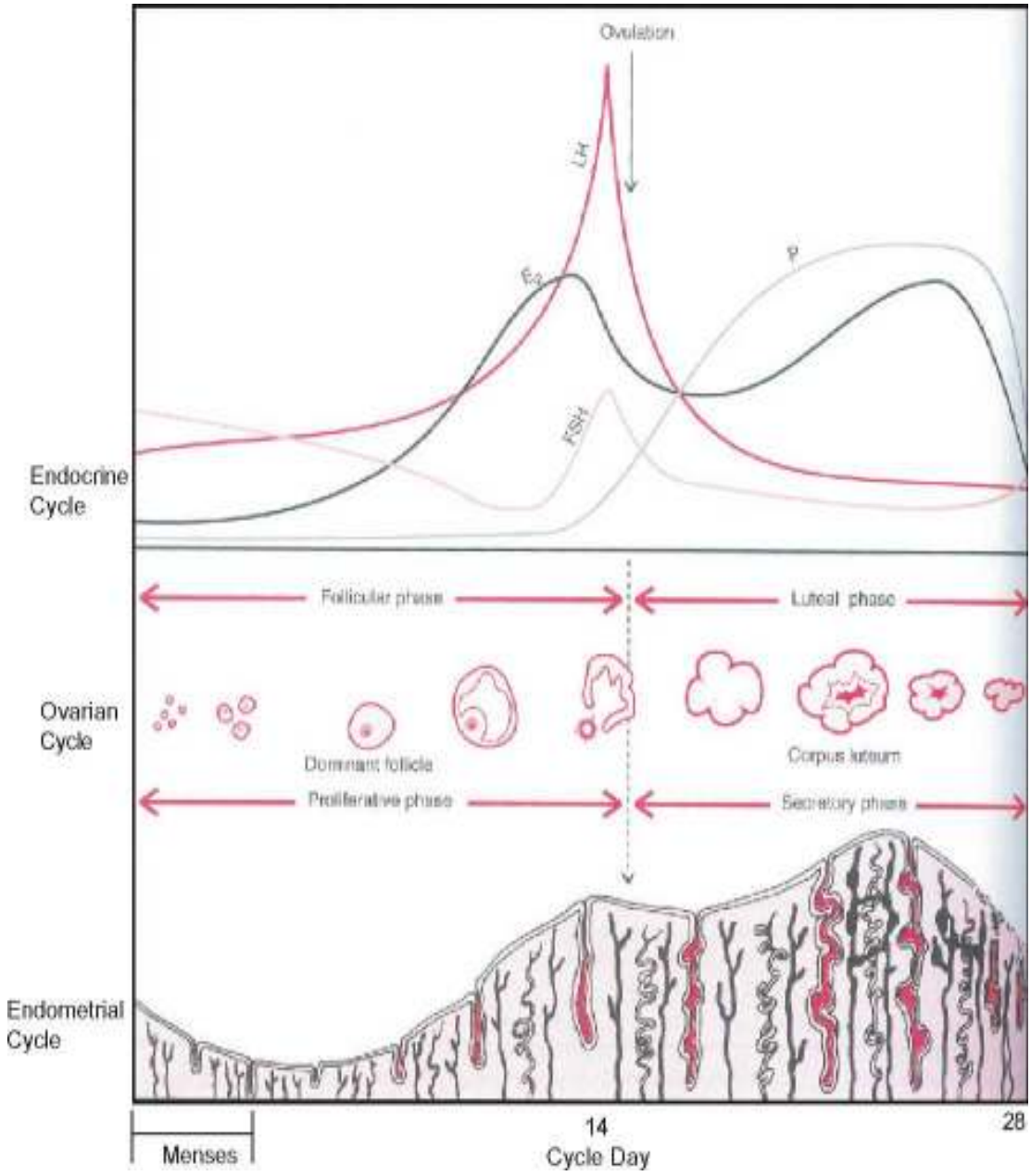
Hypomenorhea : Uterine bleeding that is regular but decreased in amount.

Intermenstrual bleeding : Uterine bleeding usually not excessive occuring between regular menstrual periods.

Metrorhagia - Irregularly timed bleeding.

Relationship Between Endocrine, Ovarian And

Endometrial Cycles



PHYSIOLOGY OF MENSTRUATION

As DUB is a hormonal disorder, knowledge of the normal hormonal control of menstruation is useful. Menstruation may be defined as a "periodic and cyclical shedding of progestational endometrium accompanied by loss of blood". It takes places at approximately 28 days interval with a range of 21-35 days between the menarche (onset of menstruation) and menopause (cessation of menstruation). Menstruation is dependent on hormonal control mainly from the hypothalamus, anterior pituitary and ovary.

The first 3-5 days are occupied with menstruation when two third of the endometrium is shed. The remaining 23-25 days are divided into the follicular and luteal phases or proliferative and secretory phases respectively. The follicular phase is characterized by maturation of the ***Graffian Follicle*** and the consequent production of estrogen hormone which brings about proliferation of the endometrium. The luteal phase which occurs following ovulation is characterized by the formation of the corpus luteum and the production of both estrogen and progesterone which brings about secretory changes in the endometrium.[32]

Ovulation is tuned in relation to the next menstrual period which it precedes by 14±2 days; this means that the luteal phase in the ovary is relatively constant in duration whereas the length of the follicular phase varies with the total length of the cycle.

The onset and duration of these phases are determined by a cyclical and sequential discharge of gonadotrophins by the hypothalamo-pituitary system. The gonadotrophins i.e. follicle stimulating hormone (FSH) and luteinizing hormone (LH) are produced by the anterior pituitary. Their release is mediated by a hypothalamic releasing factor - LH/FSH-RH (GnRH).

The FSH stimulates the Graffian follicle to mature and its action is predominant in the first half of the cycle - the follicular phase. The granulosa and the theca cells of the follicle produce increasing amounts of estrogen which reaches a peak just before ovulation. The high levels of estrogen in the circulation conditions the pituitary to respond to the (GnRH) by secreting LH instead of FSH. A high level of LH induces ovulation and corpus luteum formation with a consequent increase in the secretion of progesterone. The output of LH/FSH-RH(GnRH) then decreases. It is not known whether progesterone inhibits its release or whether the output of LH/FSH-RH (GnRH) is self limiting. Whatever

the mechanism, the production of the releasing hormone falls or stops. This leads to a drop in LH and degeneration of the corpus luteum. The resulting fall in the level of both estrogen and progesterone leads to menstruation and stimulates the hypothalamus to release GnRH to start the next cycle.

Estrogen, which predominate during the proliferative phase is secreted by the follicular cells and it is a very potent steroid, capable of producing rapid and significant changes in target tissue (uterus, vagina, breast) which depends on their activity to produce a special cytoplasmic protein called ***"estrogen receptor"*** . Estrogen causes growth and proliferation of the cells(stromal and glandular) in the endometrium. Experimentally intravenous administration of estrogen causes prompt hyperemia and rapid uptake of water.

Progesterone, whose effect prevails in the secretory phase is secreted by the corpus luteal cells. Specific receptors for progesterone has also been detected in the endometrium. Progesterone helps in differentiation of stromal cells either into large predecidual cells or into small endometrial granulocytes. It also causes growth of spiral arterioles.[32]

ANOVULATORY BLEEDING[32, 33]

Anovulation or oligo-ovulation is the commonest cause of abnormal uterine bleeding when no organic cause has been found.

The characteristic feature is the absence of active corpus luteum tissue in the ovary. A follicle ripens but fails to rupture, the ovum dies and follicle may go onto cyst formation whether it forms a cyst or not, it produces estrogen for time and this act on the uterus without being opposed by progesterone.

The production may be continuous at a moderate level, or intermittently high and low. In either case the uterus responds by hypertrophy of its myometrium and endometrium, and the latter may become polypoidal. On section the endometrium shows the picture of hyperplasia, usually of cystic type (SWISS CHEESE) but occasionally adenomatous.

Bleeding is acyclical it is continuous for 2-8 weeks and can be so heavy as to threaten life. In about half the cases it is preceded by a short period of amenorrhea which coincides with a continuously high production of estrogen by the follicle and this type of clinical picture was earlier often labelled as metropathia haemorrhagica. When the granulosa cells becomes less active or when the endometrium grows so thick that

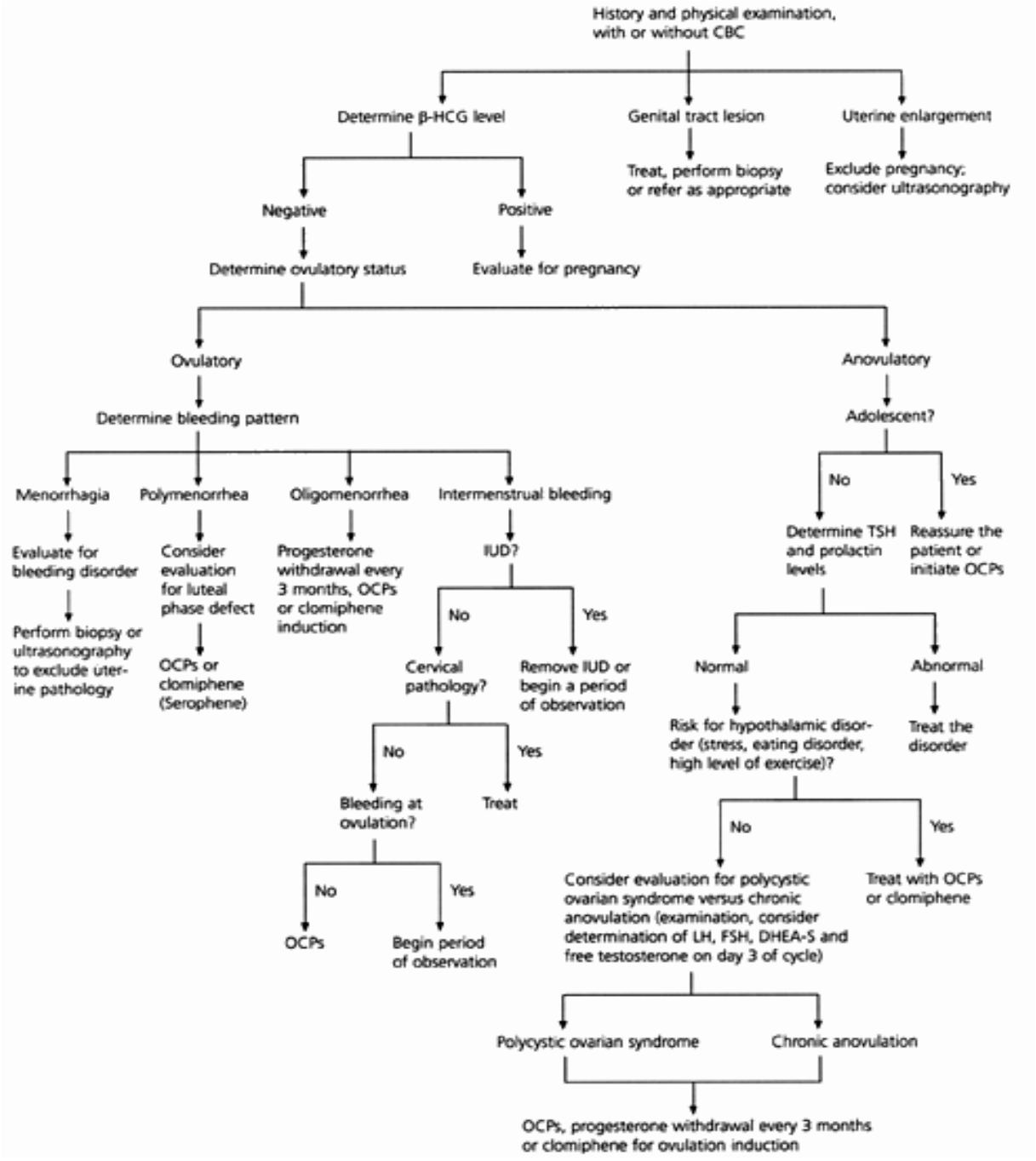
the supply of estrogen becomes relatively inadequate, estrogen withdrawal bleeding takes place. The bleeding is always painless. On examination the uterus feels slightly enlarged and sometimes possible to palpate cystic ovaries. A definitive diagnosis is only by histological examination of curettings.

The underlying cause is unknown personally the failure in ovulation, reflects an abnormal gonadotrophin stimulus. Behind this there is often a hypothalamic and cortical basis, as in the case of other forms of dysfunctional bleeding, being mostly seen in nervously tense and emotional subjects. It recurs most commonly during the few years preceding the menopause, but is occasionally seen in girls aged 12-20 years. In the latter it shows a strong tendency to spontaneous cure.

PALM COEIN CLASSIFICATION

- Polyp
- Adenomyosis
- Leiomyoma
- Malignancy
- Coagulopathy
- Endocrinal
- Iatrogenic
- Not otherwise specified

Initial Approach to Abnormal Uterine Bleeding in Premenopausal Patients



Algorithm for the diagnostic evaluation of abnormal uterine bleeding in premenopausal patients. (CBC = complete blood count; β-HCG = beta human chorionic gonadotropin; OCPs = oral contraceptive pills; IUD = intrauterine device; TSH = thyroid-stimulating hormone; LH = luteinizing hormone; FSH = follicle-stimulating hormone; DHEA-S = dihydroepiandrosterone sulfate).

THYROID HORMONE PHYSIOLOGY

THOMAS WHARTON in 1658 gave the thyroid gland its modern name (meaning oblong shield) because he believed the function of thyroid was to fill vacant spaces and contribute to the shape and beauty of neck, especially in woman.[33] Since then the endocrinology of thyroid hormone have come long way. For unknown reasons, thyroid diseases is more common in women than in men, perhaps autoimmune nature of the disease is one contributing factor.

It is situated in the anterior neck and consists of two pear shaped lobes extending to 6th tracheal ring. Isthmus joins the medial aspect of the lobes extends over the second to fourth tracheal ring. Superiorly extends to thyroid cartilage. In adults thyroid weighs approximately 20g while in newborn 1.5g which increases progressively with age/size.[16]

The vascular supply to the thyroid is derived from the superior and inferior thyroidal arteries, venous blood drains through thyroidal veins into the external jugular vein. Lymphatics drain into the internal jugular Lymph Node (Becker).

A) SYNTHESIS OF THYROID HORMONE AND CIRCULATION:[34]

The functional unit of thyroid is the follicle consisting an outer layer of follicular cells surrounding the central mass of colloid.

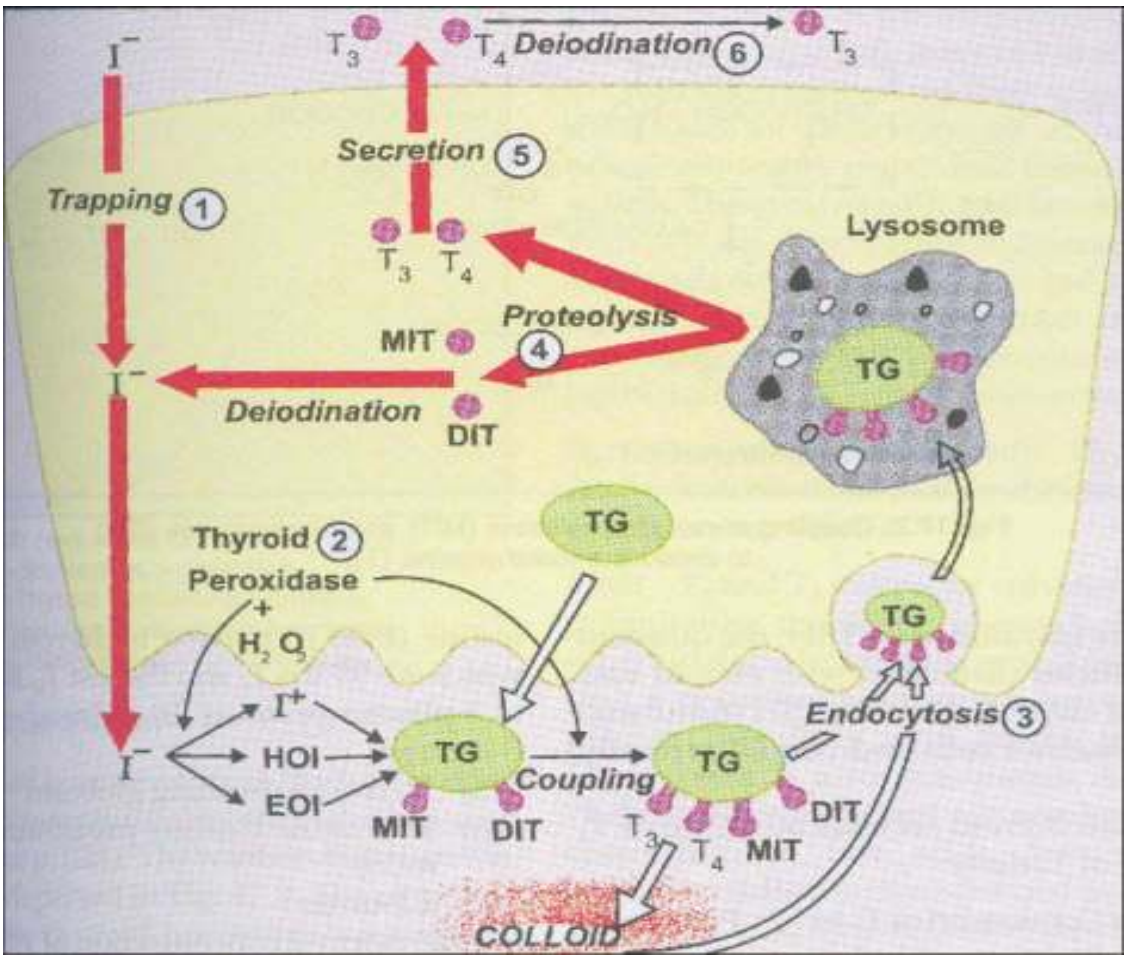
Thyroxine structure was determined by Harrington and Barger in 1927 and triiodothyronine by Gross, PittRivers and Roche et al in 1952.

a) Iodine transport :

Thyroid hormone synthesis depend in large part on an adequate supply of iodine in diet which is absorbed as iodide in small intestine and then actively transported into follicular cells. This happens under TSH (thyroid stimulating hormone) effect. Anions such as bromide, thiocyanate (SCNT), perchlorate (CIO4) and pertechnetate (Tc04) inhibit it. The ATPase dependent sodium-iodide cotransporter or symporter has been isolated and cloned.[35]

This trapping by the symporter is rate limting thyroid hormone synthesis which can move iodide 30 fold over blood concentrations.

SYNTHESIS, STORAGE AND SECRETION OF THYROID HORMONE



b) Organification :

Iodide ions transported into the thyroid cell are oxidized before being used for iodinating tyrosyl residue present in the thyroglobulin (Tg) molecules. This process is called organification takes place at the apex and requires enzyme thyroid peroxidase (TPO).

The decrease in peroxidase activity and organification that follows iodine excess, known as WOLFF CHAIKOFF EFFECT may protect against hyperthyroidism.[36]

c) ***Coupling*** :

Iodination of the tyrosyl residue within Tg involves substitution on the tyrosyl ring.If one iodine replaces a hydrogen then monoiodotyrosine (MIT) and if two then Diiodotyrosine(DIT) is formed. The MIT/DIT ratio depends on iodine availability (during iodine deficiency MIT > DIT).

The iodothyronines are formed by coupling of two DITs to form T4 and one MIT and DIT to form T3. Reverse T3 is a biologically - inactive form and is formed by removal of an iodine from the nonphenolic ring of T4.

In normal adults about one third of the T4 secreted each day is converted in peripheral tissues to T3 (largely in liver and kidney) and around 40% to reverse T3. However the secretion of T4 is 20 times the rate of T3 (Speroff).[22]

BINDING PROTEINS:

T4 and T3 are reversibly bound to several proteins synthesized by the liver. Approximately 70% of thyroid hormones are bound to Thyroxine binding globulin(TBG) which is therefore the major determining factor in the total thyroid hormone concentration in the circulation. Remaining 30% is bound to thyroxine binding prealbumin (Transthyretin) (TTR) and albumin. The binding proteins have a greater affinity for T4 and thus allows T3 to have greater entry into cells. TBG is synthesized in the liver and this synthesis is increased by estrogens.[37]

B) REGULATION OF THYROID HORMONE :

Thyroid hormone regulation is directed through the neuroendocrine – hypothalamic pituitary - thyroid peripheral tissue axis. ***B.R. Walker and AD Toft*** explains (In Davidson text book medicine) that production of T3 and T4 in the thyroid is stimulated by TSH (thyrotrophin ,thyroid stimulating hormone), a glycoprotein released from the thyrotroph cells of the anterior pituitary in response to the hypothalamic tripeptide, TRH (thyrotrophin releasing hormone). A circadian rhythm of TSH secretion can be demonstrated with a peak at 0100 hrs and through at 1100 hrs, but the variation is small and does not influence the timing of blood sampling when assessing thyroid function.

There is a negative feedback of thyroid hormones on the thyrotrophs such that in hyperthyroidism, when plasma concentrations of T3 and T4 are raised TSH secretion is suppressed and in hypothyroidism due to disease of the thyroid gland low T3 and T4 are associated with high circulating TSH levels.

The anterior pituitary is very sensitive to minor changes in thyroid hormone levels within the normal range. The combination of 'normal' T3 and T4 and suppressed or raised TSH is known subclinical hyperthyroidism and subclinical hypothyroidism respectively.

Estrogen increases the TRH receptor content of the pituitary hence the TSH response to TRH is greater in women. TRH also stimulate prolactin secretion by the pituitary.

C) THYROID FUNCTION TEST :

The determination of circulating levels of thyroid hormones is essential for an accurate assessment of the functional status of patients.For many years Serum thyroxine (T4) concentration was the most useful first line test. Serum T4 is determined almost exclusively by RIA, values in euthyroid patients ranges 5-12 mcg/dl. In general (except T3 thyrotoxicosis etc.,) the value of T3 (serum triiodothyronine) parallel

with T4 level and ranges in healthy subject being 80-200ng/dl. Reverse T3 (rT3) varies from 10-60 ng/dl. rT3 values are often elevated in nonthyroidal illness.[39,34]

To assess the patients true metabolic status estimation of the concentration of free T4 or free T3 - the "active" hormones is advisable by equilibrium dialysis, the most precise method, (which may not be available in all centers).[40]

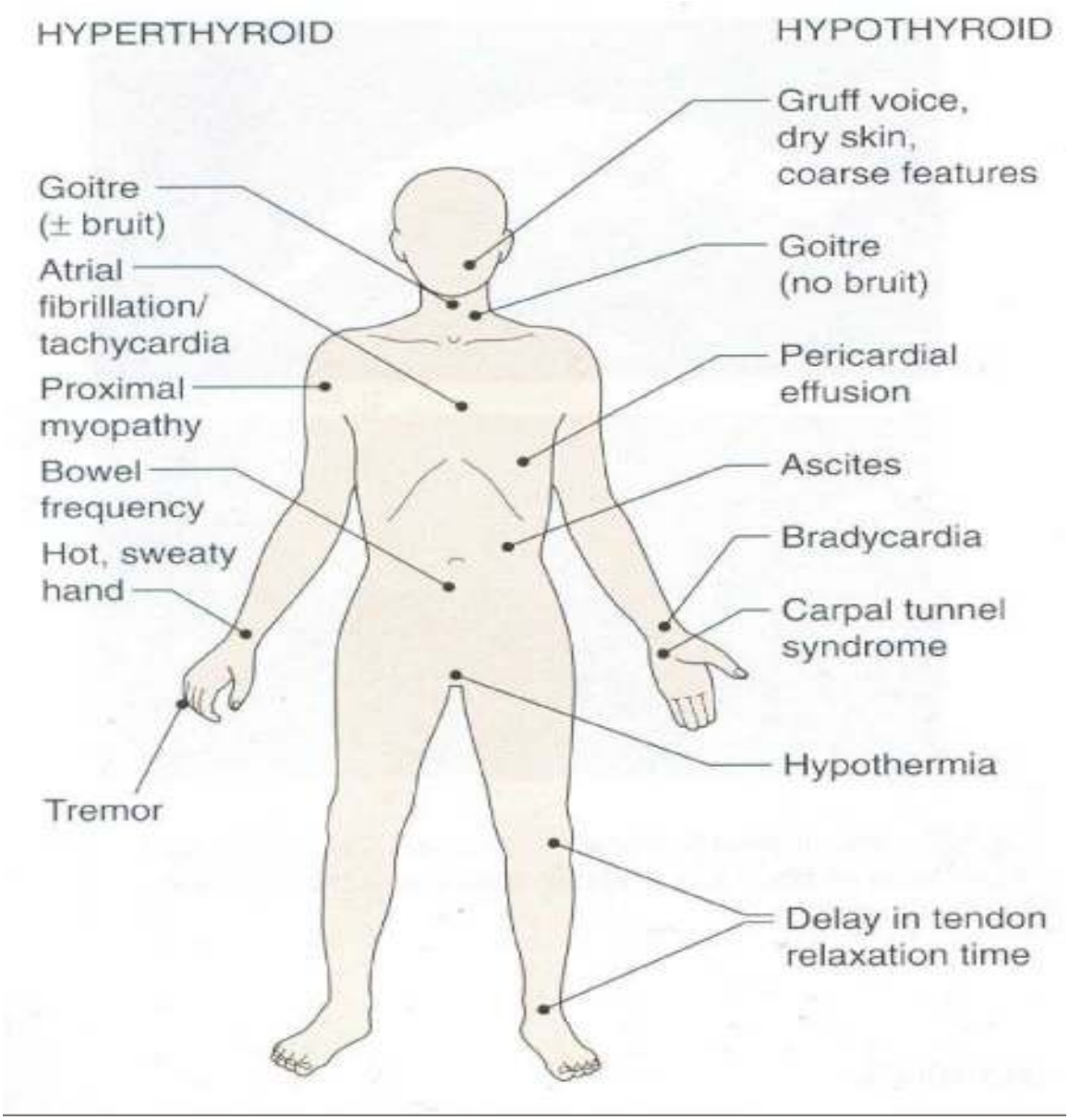
Serum thyrotropin (thyroid stimulating hormone, TSH) has been a reliable indicator of primary hypothyroidism with levels rising even when thyroid deficiency is mild and T4 levels still normal.[34] Although RIAs were developed that could detect TSH concentrations of 0.1 to 0.3 mcg/ml, it was achieved by extensive purification. Commercially available RIAs have not provided quantitative values below 1 mIU/l, many second - generation assays detect TSH in the range of 0.1 to 0.5 mIU/l and third generation assay have an even 10 fold greater functional sensitivity.[41,42,43,44]

Extremely sensitive (fourth generation) assays can detect TSH levels = 0.004 mU/l but for practical purposes, assay Sensitive to = 0.1 mU/l are sufficient. The widespread availability of TSH Radio-immunoassay has rendered the TRH stimulation test virtually obsolete.[45]

Table D: SYMPTOMS AND SIGNS RELEVANT TO DISORDERED THYROID FUNCTION: (Leonard Wartofsky, Becker's thyroid diseases)

Body system	Hyperthyroidism	Hypothyroidism
Central nervous system	Irritability, anxiety, depression, insomnia, agitation, heat intolerance	Memory loss, somnolency depression, cold intolerance.
Eyes, ears, nose and throat	Eye grittiness, tearing, Exopthalmos	Periorbital edema, hoarseness
Cardio respiratory	Dyspnea, palpitations Tachycardia	Chest pain, peripheral edema, Bradycardia
Gastro intestinal	Increased appetite, weight loss, dysphagia, diarrhea	Decreased appetite, weight gain, constipation
Skin	Increased sweating, hair loss, pruritus	Decreased sweating, dry coarse skin, coarse hair, hair loss
Genitourinary	Polyuria, polydipsia, amenorrhea, decreased libido, impotence	Menorrhagia, decreased libido
Musculo-skeletal	Fatigue, muscle weakness, tremor	Fatigue, arthralgias, myalgias

Features of hyper and hypothyroidism



PHYSICAL EXAMINATION RELATED TO THYROID DYSFUNCTION

General Survey

1. Build and nutrition- In thyrotoxicosis the patient is usually thin and underweight. Patient have excessive sweating moist skin with muscle wasting, in hypothyroidism reverse is true (dry skin, obese).

2. Facies - In thyrotoxicosis one can see the facial expression of excitement, tension, nervousness with or without variable degree of exopthalmos. Mask like puffy face is seen in hypothyroidism.

3. Mental State and intelligence- Hypothyroid patients are naturally dull with low intelligence.

4. Pulse rate especially sleeping pulse rate is very useful index to determine the degree of thyrotoxicosis. Bradycardia may be present in hypothyroid state.

5. Eye Signs should be appreciated and looked for in primary thyrotoxicosis.

   "Lid retraction" is when upper lid is higher than normal and is different from "Lid lag" where the upper eyelid cannot keep pace with the eyeball when it looks down. Both these signs are NOT exopthalmos.

Exopthalmos develops when eyeball is pushed forwards due to increase in fat or edema or cellular infiltration in the retro-orbital space, the eyelids are retracted, weakness of ocular muscles (Ophthalmoplegia) was looked for by examining their movements. Chemosis (edema) of conjunctiva may be present.

Local Examination

1. ***Inspection*** - Normal thyroid gland is not obvious on inspection. In short neck, obese people, Pizzillo's Method is used to render inspection easier. A thyroid swelling may be uniform (physiological goiter, colloid goiter, hashimoto's disease) or isolated nodules. A thyroid gland moves on deglutition as the thyroid gland is fixed to the larynx. Congestion of face and distress become evident in case of retrosternal goiter due to obstruction of the great veins at the thoracic inlet when patient is asked to raise both the arms over his head.

2. ***Palpation*** - The gland should always be palpated with the patients neck slightly flexed from behind and from the front. Palpation of each lobe is best carried out from the front. The surface and consistency is observed whether smooth (primary thyrotoxicosis or colloid goiter) or bosselated (multinodular goiter). Mobility of

gland should be noted. Palpation of cervical lymph node is done routinely to rule out any underlying malignancy.

3. Percussion is done over manubrium sterni to exclude the presence of a retrosternal goiter.
4. Auscultation - In primary toxic goiter a systolic bruit may be heard over the goiter due to increased vascularity(Thyroid Bruit).
5. Measurement of the circumference of the neck at the most prominent part of the swelling may be taken at intervals.

Table E:- PATTERN OF THYROID FUNCTION TEST RESULTS IN PATIENTS WITH THYROID DISEASE (DAVIDSON'S)[35]

Type of disease	**T4**	**T3**	**TSH**
Conventional hyperthyroidism (95% of cases)	Raised	Raised	Undetectable
T3 hyperthyroidism (5% of cases)	Normal[1]	Raised	Undetectable
Subclinical hyperthyroidism	Normal[1]	Normal[1]	Undetectable
Primary hypothyroidism	Low	Not indicated[2]	Raised (usually >20m U/L)
Subclinical hypothyroidism	Normal[3]	Not indicated[2]	Raised
Secondary hypothyroidism i.e. pituitary or hypothalamic disease	Low	Not indicated[2]	Usually undetectable[4]
Non thyroidal illness	Raised	Low, normal or raised[5]	Usually undetectable.

1) Usually upper part of reference range

2) Measurement of T3 is not a sensitive indicator of hypothyroidism and should not be requested.

3) Usually lower part of reference range

4) May be normal or even slightly raised due to the production of immune reactive forms of TSH which have no biological activity.

5) Depending on the assay system.

MATERIAL AND METHODS

Present study aimed to establish the role of thyroid dysfunctions in relation to menstrual disturbances. This study was carried out in the department of Obstetrics & Gynecology, Coimbatore Medical College, Coimbatore. 100 women who were given clinically the provisional diagnosis as dysfunctional uterine bleeding during the period from November 2012 to October 2013 were selected for the study.

INCLUSION CRITERIA

1) All cases provisionally diagnosed to have dysfunctional uterine bleeding from puberty to premenopausal age groups.

2) All patients with major complaints of menstrual disturbances. e.g; menorrhagia , polymenorrhea , polymenorrhagia, metropathia hemorrhagica,metrorrhagia,oligo- and hypomenorrhea.

EXCLUSION CRITERIA

1) Patients who were on drugs or hormones , IUCD users.

2) Patients with history of bleeding disorders.

3) Patients with demonstrable organic disease of reproductive tract.

METHOD:

- A detailed history with special references to age and bleeding pattern
- Onset, duration and amount of bleeding complaints related to thyroid dysfunction noted in detail.
- A detailed history of thyroid disorders (hypo and hyperthyroidism) is obtained.
- A thorough clinical examination including general physical examination, neck examination, gynaecological and systemic examination with special reference to thyroid dysfunction.
- All patients are subjected to routine investigations like haemoglobin percentage, blood counts, urine examination for albumin, sugar and microscopy.
- Bleeding time and clotting time performed for all patients.
- All patients subjected to thyroid function test in her sera (T3, T4 & TSH.)

Thyroid stimulating hormone (TSH) assay done by ultra sensitive sandwich chemi luminescent immuno assay and T3 & T4 measured by competitive chemi luminescent immuno assay.

Reference values

Test name / units (reference range)

Thyroid stimulating hormone (TSH) / m IU/ml (0.40 -5.6)

Triiodothyronine (T3) 61-200 ng/dl

Thyroxine (T 4) / (4.6 - 12) µg/ml

T3, T4 and TSH measured and patients are grouped into four categories,

- EUTHYROID
- SUBCLINICAL HYPOTHYROID
- HYPOTHYROID
- HYPERTHYROID

Patients found to have thyroid dysfunction are referred to physician for further management.

OBSERVATION AND RESULTS

Dysfunctional uterine bleeding is one of the most frequently encountered condition in gynecological practice.

The following few pages are tables which will give a descriptive analysis of the age distribution, the parity distribution, symptomatic distribution of DUB and its association with thyroid dysfunction.

The total number of patients studied was 100 from Nov 2012 - October 2013.

TABLE 1

DISTRIBUTION OF PATIENTS ACCORDING TO AGE

Age group (years)	No. of cases
< 20	23
21-30	30
31-40	36
41-45	11
TOTAL	100

According to above table maximum number of patients in the study group belongs to the age group of 31-40 years (36%),between age group 41-45 years 11 cases were seen (11%).

Graph 1

DISTRIBUTION OF PATIENTS ACCORDING TO AGE

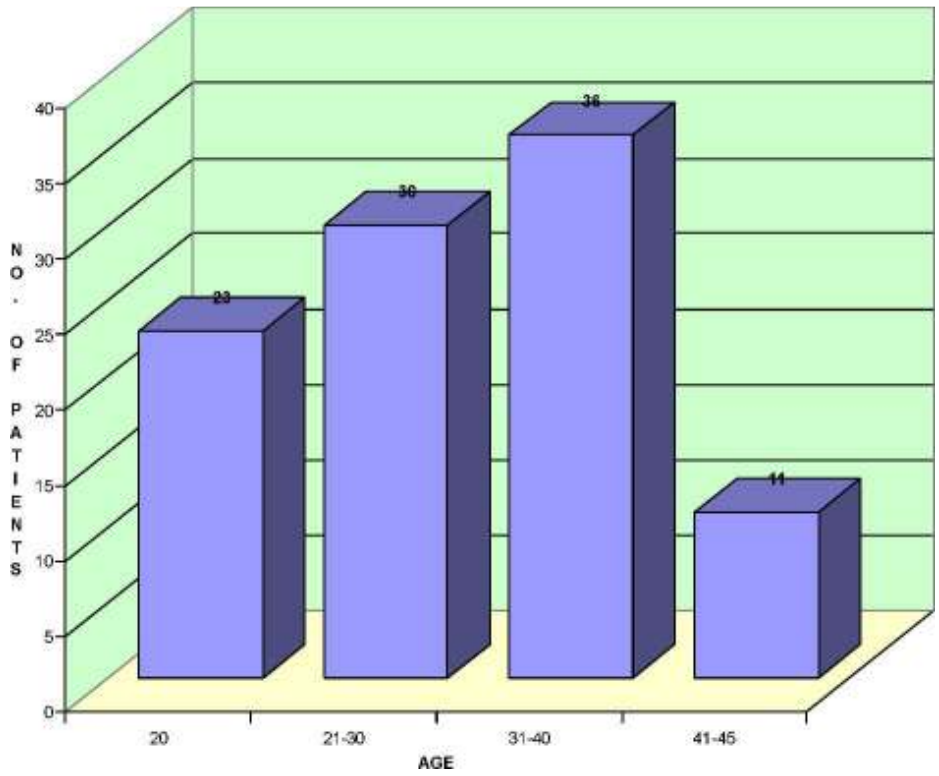


Table 2

DISTRIBUTION OF PATIENTS ACCORDING TO PARITY

Parity	No. of Patients	Percentage
Unmarried	25	25%
0	6	6%
1	9	9%
2	22	22%
3	21	21%
4	10	10%
5	7	7%
100	100	100%

The above column shows relationship of DUB with parity. Among 100 cases of DUB 25 patients were unmarried , 6 patients were nulliparous ,9 patients were para 1, 22 patients were para 2, 21patients were para 3, 10 patients were para 4, 7 patients were para 5. In this study maximum number of patients were unmarried (25%) and minimum number of patient presenting as clinical DUB cases were of nulliparous.

GRAPH 2 :

Distribution of patients according to parity

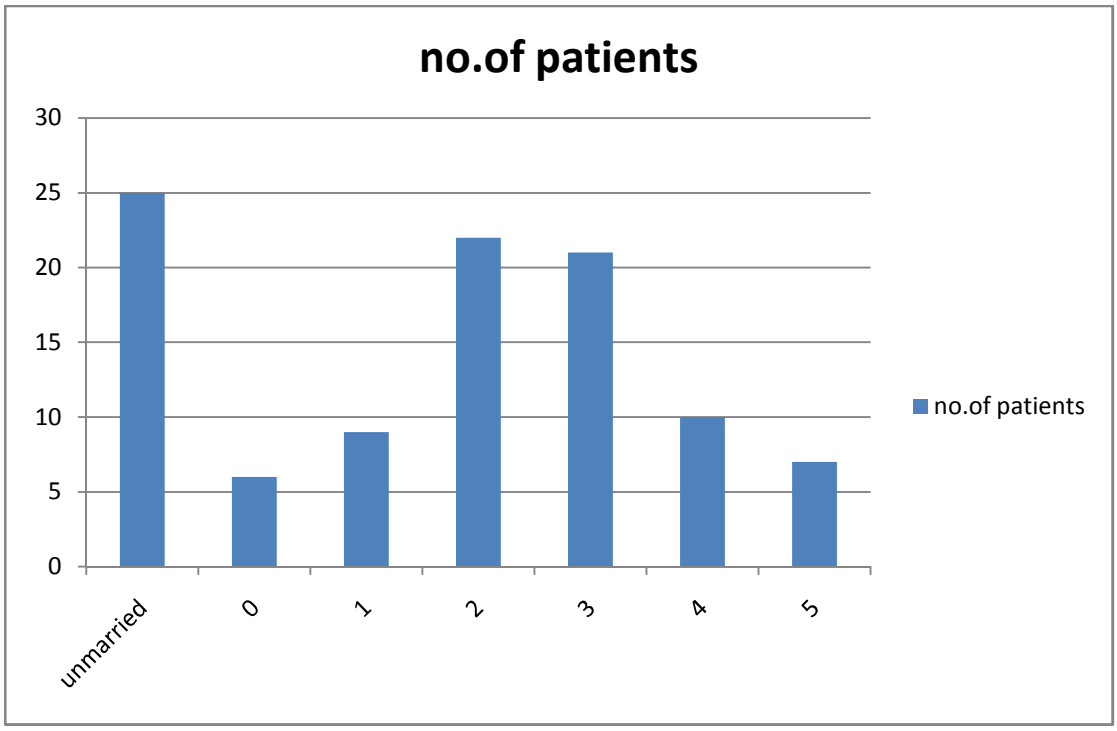


TABLE 3 :

DISTRIBUTION OF PATIENTS ACCORDING TO SYMPTOMS

Type of bleeding	No. of cases
Acyclical (MPH)	15
Hypomenorrhea	5
Menorrhagia	32
Metrorrhagia	3
Oligomenorrhea	19
Polymenorrhagia	18
Polymenorrhea	8
Total	100

GRAPH 3 : DISTRIBUTION OF PATIENTS ACCORDING TO BLEEDING PATTERN

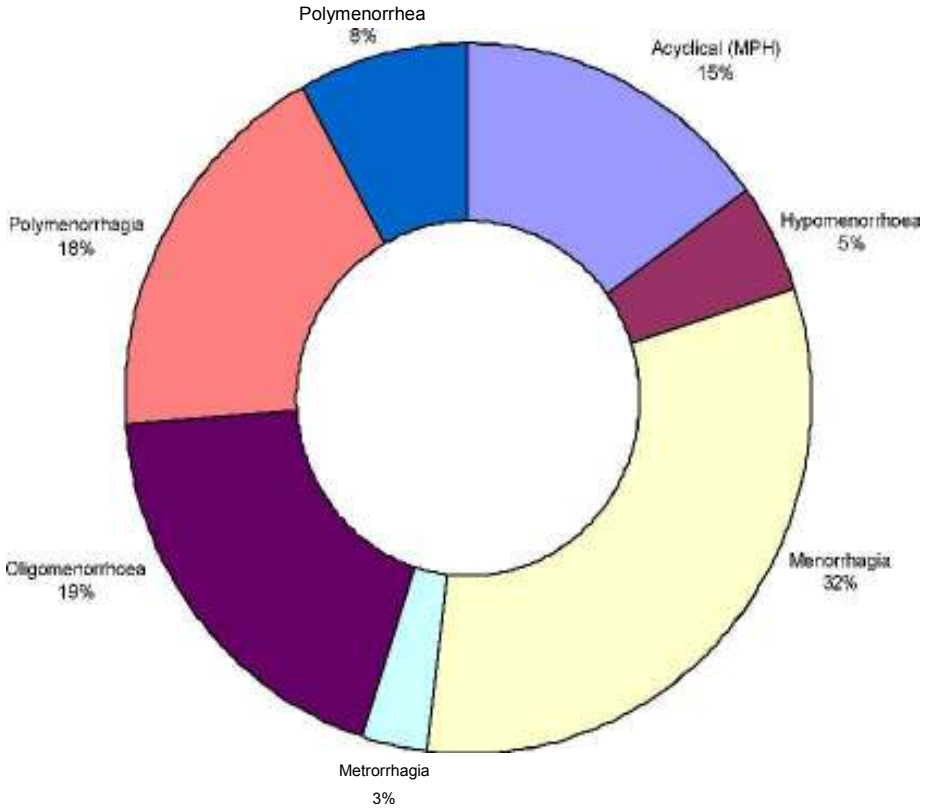


TABLE 4

DISTRIBUTION OF PATIENTS ACCORDING TO AGE GROUPS AND BLEEDING PATTERN

Age in years	No. Of cases	Acyclical (MPH)		Hypo menorrhea		Menorrhagia		Metrorrhagia		Oligo menorrhea		Poly menorrhagia		Poly menorrhea	
< 20	23	5	21.7%	1	4.3%	9	39.1%	1	4.3%	4	17.3%	3	13.04 %	0	0
21 - 30	30	3	10%	3	13.04%	11	36.6%	0	0	7	23.3%	1	3.3%	5	16.6%
31 - 40	36	5	13.8%	1	2.7%	10	27.7%	2	5.5%	7	19.4%	3	8.3%	8	22.2%
41 -50	11	2	18.18%	0	0	2	18%	0	0	1	9%	1	9%	5	45.4%
	100	15		5		32		3		19		8		18	

The above column shows 100 patients who came with the complaint of different bleeding pattern. Commonest was menorrhagia 32%. Among others 15% of cases presented with Acyclical (MPH), 19% with Oligomenorrhea, 18% had polymenorrhagia, 8% had polymenorrhea, 5% had Hypomenorrhea, 3% had metrorrhagia. Maximum patients were seen with complaint of menorrhagia, following which oligomenorrhea seen.

Patients with age less than and equal to 20 years, most common bleeding pattern was menorrhagia (39.1%). Followed with acyclical metropathia(21.7%). Oligomenorrhea was present in 17.3% of the cases.

Similarly in age groups- 21-30 years and 31 - 40 years the commonest bleeding pattern was menorrhagia. Whereas in patients with age >41 had polymenorrhea as their commonest bleeding pattern.

TABLE 5 :

DISTRIBUTION OF PATIENTS ACCORDING TO THYROID FUNCTION.

Thyroid function	No. of cases	Percentage
Euthyroid	77	77%
Hypothyroid	7	7%
Subclinical Hypothyroid	13	13%
Hyper thyroid	3	3%
Total	100	100%

According to this table maximum number of apparently normal patients with DUB belonged to the category of subclinical hypothyroidism (13%). Hormonal levels revealing profound hypothyroidism in patients without any symptoms was present in only 7 % of cases. 3% of cases had hyperthyroidism though they were clinically normal.

GRAPH 4 :

Thyroid Function

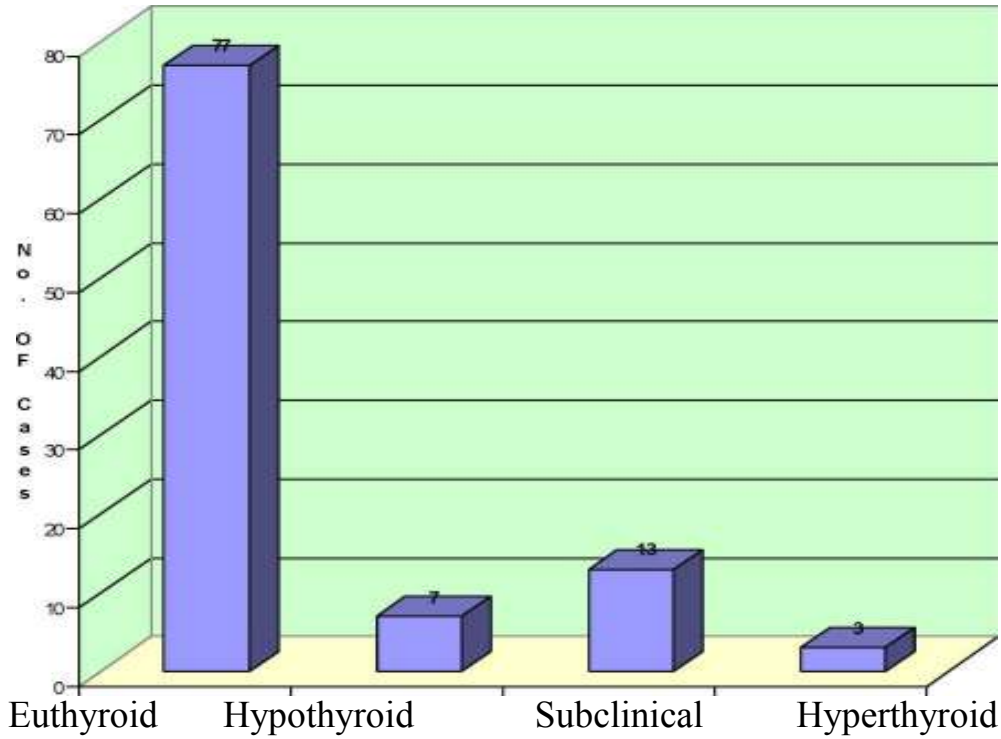


Table 6 : THYROID DYSFUNCTION IN RELATION TO PARITY

Parity	No. cases	Euthyroid	TDF			Total Thyroid dysfunction	Percentage
Unmarried	25	19	3	3	.	6	24%
0	6	4	1	1	-	2	33%
1	9	8	0	0	1	1	11%
2	22	17	1	3	1	5	22.7%
3	21	16	2	3	0	5	23.8%
4	10	7	0	2	1	3	30%
5	7	6	0	1	0	1	14.2%
Total	100		7	13	3	23	100%

This table shows the relationship of parity to thyroid dysfunction in patients with provisionally diagnosed DUB. Thyroid dysfunction was commonest among nulliparous patients about 33% and next common among patients who were para 4, i.e, 30%. 24% of unmarried patients had thyroid dysfunction. Thyroid dysfunction was least common in patients who were primipara only (11%). This shows that thyroid dysfunction can lead to infertility (nulliparous state) . The difference in thyroid functioning in individual type of parity is not statistically significant. Chi-square =0.62 ; P=0.89(NS) .

GRAPH 5 :

Thyroid dysfunction in relation to parity

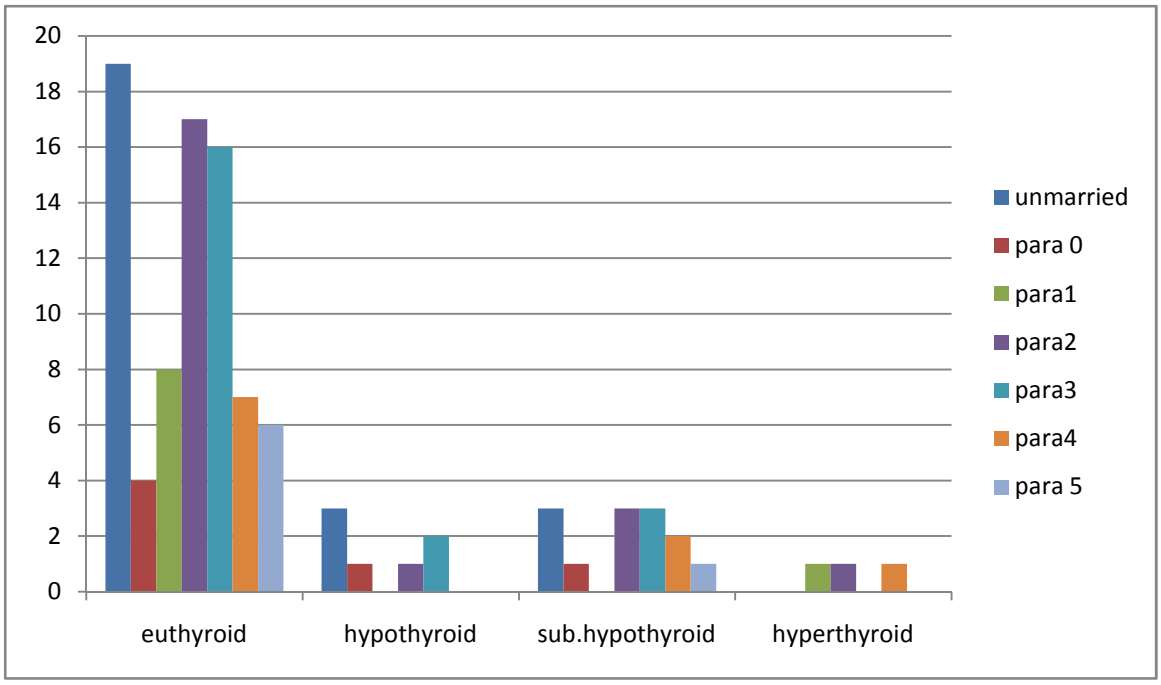


Table 7:

THYROID DYSFUNCTION IN DIFFERENT AGE GROUPS.

AGE	No. of cases	Euthyroid	Hypo Thyroid	Sub hypothyroid	Hyper thyroid	Total Thyroid Dysfunction	Percentage
< 20	23	17	3	3	0	6	26%
21 -30	30	26	1	1	2	4	13.3%
31 –40	36	26	1	8	1	10	27.7%
41 - 45	11	8	2	1	0	3	27.2%
Total	100	77	7	13	3	23	23%

This table shows the relationship of thyroid dysfunction to different age groups. Thyroid dysfunction was commonest in the age group between 31-40 years - 27.7%. Followed with 27.2% among patients between 41-45 years. 26% of patients less than 20 years showed thyroid dysfunction.

Thyroid dysfunction was least common in patients between 21-30 years- 13% .This shows that thyroid dysfunction becomes common as patients age advances and in this study it is commonly seen in patients more than 30 years. Thyroid dysfunction is least common in patients between 20-30 years of age. The difference in thyroid functioning in individual age groups is not statistically significant . Chi square=2.28 ;P=0.52(NS)

Graph 6 :

Thyroid Dysfunction

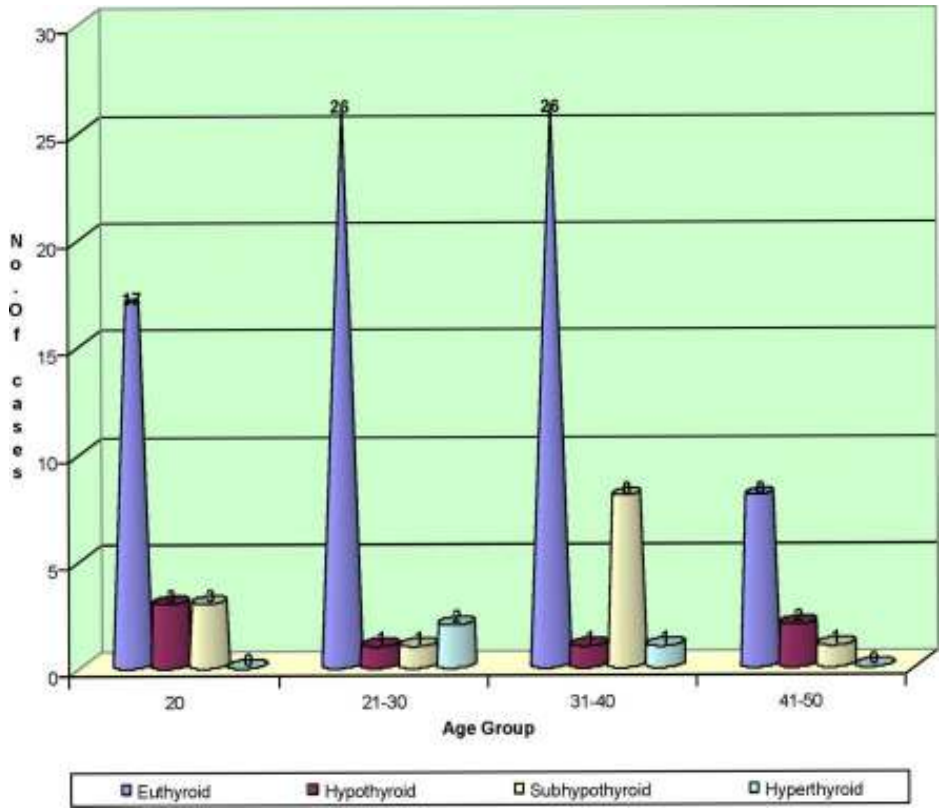


Table 8: Pattern of Bleeding

Types of Bleeding	No.of cases	Euthyroid	Hypo thyroid	Subhypo thyroid	hyperthyroid
Acylical (MPH)	15	10	3	2	
Hypomenorrhea	5	5	-	-	
Menorrhagia	32	24	2	6	
Metrorrhagia	3	3	-	-	
Oligomenorrhea	19	13	2	1	3
Polymenorrhagia	18	17	-	1	
Polymenorrhea	8	5	-	3	
Total	100	77	7	13	3

This table shows how thyroid dysfunction which can be hypothyroidism subclinical hypothyroidism or hyperthyroidism is related to various types of bleeding abnormalities. Thyroid dysfunction was commonest in patients with polymenorrhea - 37.5%, next common in patients with acyclical metropathia - 33% followed with in patients with oligomenorrhea - 31.5%. Patients with menorrhagia had thyroid dysfunction in 25% of cases. Thyroid dysfunction was least common in patients with polymenorrhagia (5.5%) and absent in patients with metrorrhagia.

The difference in thyroid functioning in individual type of DUB is not statistically significant Chi-square=7.53 ;P=0.27(NS) .

Table 9: BLEEDING PATTERNS IN HYPOTHYROIDISM AND HYPERTHYROIDISM

Types of Bleeding	No.of Cases	Eu thyroid	**%**	**Hypo** thyroid	%	Subclinical hypothyroid	**%**	**Hyper thyroid (%)**
Acylical (MPH)	15	10	66.6%	3	20%	2	13.3%	
Hypomenorrhea	5	5	100%	-		-		
Menorrhagia	32	24	75%	2	6.2%	6	18.75%	
Metrorrhagia	3	3	100%	-		-		
Oligomenorrhea	19	13	68.4%	2	10.5%	1	5.2%	3 (15%)
Polymenorrhagia	18	17	94.4%	-		1	5.5%	
Polymenorrhea	8	5	62.5%	-		3	37.5%	

This table shows the relationship of hypothyroidism, subclinical hypothyroidism and hyperthyroidism to the different types of clinically diagnosed cases of DUB. In acyclical MPH, patients were hypothyroid in 20% of cases and 13.3% of patients had subclinical hypothyroidism. Whereas in patients with menorrhagia only 6.2% of patients had hypothyroidism and 18.75% of patients had subclinical hypothyroidism. Patients with oligomenorrhea had hyperthyroidism in 15% of patients, hypothyroidism in 10.5% of patients and subclinical hypothyroidism in 5.2%. In polymenorrhea patients 37.5% of cases had subclinical hypothyroidism.

So, patients who were subclinically hypothyroid were maximally presenting as polymenorrhea (37.5%) and menorrhagia (18.75%) and only 5.25%of patients had oligomenorrhea. Patient who were hypothyroid were predominantly having acyclical metropathia(MPH) 20% and 10.5% of patients were having oligomenorrhea.

On the other hand patients who were hyperthyroid were exclusively presenting as oligomenorrhea. Subclinical hypothyroid patients have polymenorrhea and menorrhagia as their commonest bleeding pattern.

GRAPH 7 :

Bleeding Pattern in Hypothyroidism and Hyperthyroidism

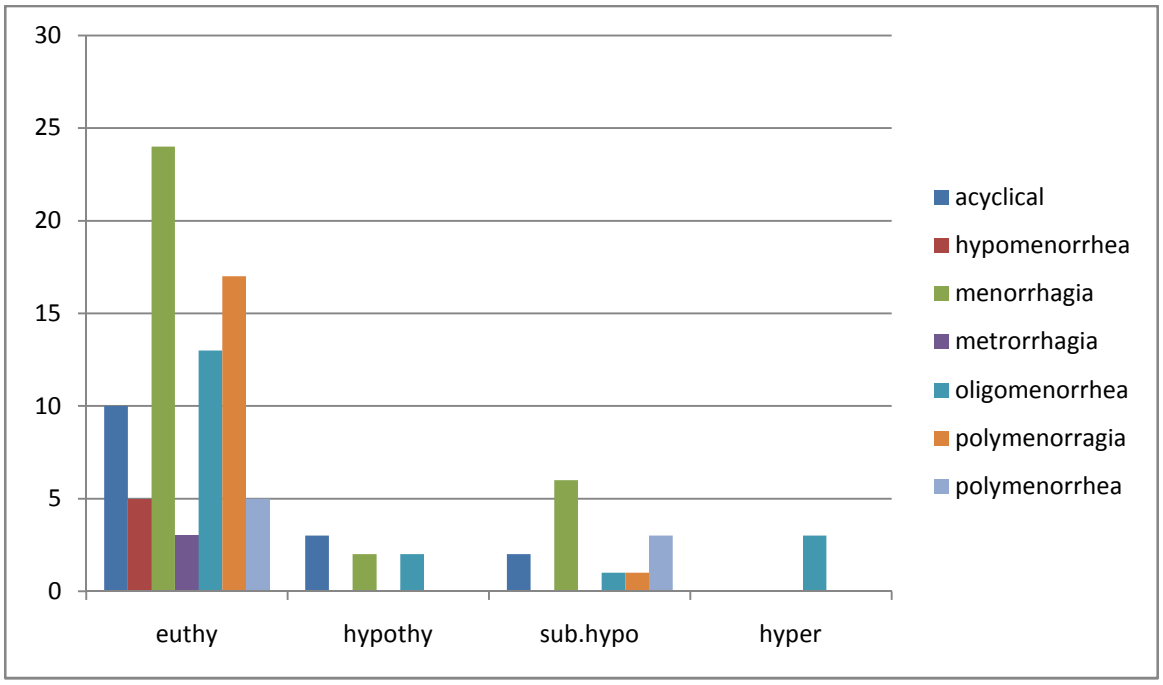


TABLE 10

TSH LEVELS AND DIFFERENT BLEEDING PATTERNS

TSH Level	No. Of cases	Acyclical (MPH)		Hypo menorrhea		Menorrhagia		Metrorrhagia		Oligo menorrhea		Poly menorrhagia		Poly menorrhea	
<0.39	3	0								3	100%				0
0.4 - 5.6 (Normal Range)	77	10		5		24		3		13		5		17	
5.7 <50.0	14	3	21%	0		6	42%			1	7.1%	3	21.4%	1	
> 50	6	2	33.3%	0		2	33.3%			2	33.3%				

Thyroid Dysfunction

This table shows the relation of TSH levels to different types of bleeding patterns. Patients with TSH levels < 0.39 all of them presented with symptoms of oligomenorrhea.

Patients with TSH levels moderately elevated 5.7 - <50.0 as seen in subclinical hypothyroidism, 42% of patients presented with menorrhagia, 21.45 % of patients presented with polymenorrhea and 21% presented with acyclical MPH. In this group maximum number of patients presented with menorrhagia. Patients with TSH levels profoundly elevated i.e,>50 had acyclical MPH in 33.% of cases, menorrhagia in 33.3% of cases and oligomenorrhea in 33.3% of cases. So in this table it is seen that oligomenorrhea was seen in patients with TSH value <0.39 or when profoundly high i.e, >50 on the other hand menorrhagia was mostly seen in patients with TSH value (5.7 - <50) moderately elevated.

Patients with T3 levels < 60 had acyclical MPH in 50% of the patients, 33% of patients had oligomenorrhea and 17% had menorrhagia. Where the T3 levels >200 all patients had oligomenorrhea. Only 8% of the total No. of patients showed abnormal T3 levels compared to 23% of patients who showed abnormal TSH levels.

Patients with T4 level < 4.5 equal incidence of ayclical MPH, menorrhagia and oligomenorrhea (33.3%) each.

Patients with T4 levels > 12 had predominantly oligomenorrhea as their complaints (66%). Only 12% of the total number of patients showed abnormal T4 levels compared to 23% of patients who showed abnormal TSH levels.

DISCUSSION

Thyroid dysfunction is marked by large number of menstrual aberrations.

In the present study patients were taken from all age groups which included less than 20years, (21-30 years), 31-40 years and 40-45 years and maximum number of patients belonged in the age group of 31-40 years. In author's study (**Charusheela D. Doifode *et al* 2001**) also maximum number of patients belonged in age group 31-40 years.

In the present study patients with clinical signs and symptoms of thyroid dysfunction were included, also in author's study all patients with menstrual aberrations irrespective of the presence of signs and symptoms of thyroid dysfunction were included.

Patients with organic lesions of genital tract, drug (hormone) intake, bleeding disorders, IUD users were excluded from the present study and also from the authors study (***Charusheela D. Doifode Kalpana Fernandes***).

Present study groups ranged patients according to parity as unmarried, nullipara, para1,para 2, para 3, para 4, para 5 and above. Similarly author's study had also grouped parity into unmarried, nullipara, para 1, para 2, para 3, para 4 and more.

Table 11 : Parity and Thyroid Dysfunction

Parity	Present Study		Author's Study (C.D.Doifode et al 2001)
	No.of patients with TDF	Percentage	
Unmarried	6	26%	9
0	2	8.6%	4
1	1	4.34%	20
2	5	21.7%	9
3	5	21.7%	12
4 and above	4	17.3%	6

This table compares the relationship of parity with thyroid dysfunction among patients with DUB (diagnosed clinically) in the present study and in the author's study.

In the present study 26% of unmarried patients had thyroid dysfunction and in Author's study 15% of unmarried patients had thyroid dysfunction. In the present study thyroid dysfunction was 8.6% among

nulliparous patients as compared to authors study which showed 6.67%. In the present study patients with para1, only 4.34% of them had thyroid dysfunction but in author's study thyroid dysfunction was present in 33.33% of patients with para 1.

Maximum number of patients with thyroid dysfunction were unmarried in the present study as compared to the author's study, where maximum number of patients with thyroid dysfunction belonged to para1. The present study shows a slightly higher rate of thyroid dysfunction in nulliparous women (8.6%) as compared to the author's study i.e., (6.67%).

Table 12:-

Age pattern in DUB with thyroid dysfunction.

Age in years	**Present Study**		**Author's study (C.D.Doifode *et al* 2001)**
	No. of patients with TDF	**Percentage**	**No. of patients with TDF**
Less than 20	6	26%	7
21-30	4	17.39%	10
31-40	10	43.4%	29
More than 40	3	13.04%	14

This table compares the relationship of age patterns with thyroid dysfunction among patients with DUB in the present study and in Author's (***C.D.Doifode et al 2001***) study. From this table it is noted that thyroid dysfunction was commonest in the age group (31-40 years), both in the present study and also in the author's study. 26% of patients with thyroid dysfunction were from the group of patients with DUB who were less than 20 years in the present study as compared to only 11.67% of patients with thyroid dysfunction were from this group in author's study (***C.D. Doifode et al***). 23.33% of patients with thyroid dysfunction belonged to age group above 40 years in author's study as compared to 13.04% of patients with thyroid dysfunction belonged to this age group (above 40) in present study.

In both the studies the commonest complaint was menorrhagia. In the author's study (***C.D.Doifode et al 2001***) 60 patients out of 213 patients showed their thyroid dysfunction as hypothyroidism (either subclinical or profound) author's study had no case of hyperthyroidism.

Even in the present study, patients with complaints of menorrhagia, metropathia, polymenorrhea, polymenorrhagia and metrorrhagia showed their thyroid dysfunction as hypothyroidism either subclinical or profound.

In the present study 100 cases were taken with the complaint of abnormal menstruation. Cases of metropathia(acyclical MPH) menorrhagia, polymenorrhagia, polymenorrhea, metrorrhagia, oligomenorrhea, hypomenorrhea were are included in this study.

In the author's study 213 cases of clinically diagnosed DUB were taken. Patients with oligomenorrhea, hypomenorrhea, and polymenorrhea were excluded in author's study.

In both the studies the commonest complaint was menorrhagia.

In the author's study (***C.D.Doifode et al 2001***) 60 patients out of 213 patients showed their thyroid dysfunction as hypothyroidism (either subclinical or profound) author's study had no case of hyperthyroidism.

Even in the present study, patients with complaints of menorrhagia, metropathia, polymenorrhea, polymenorrhagia and metrorrhagia showed their thyroid dysfunction as hypothyroidism either subclinical or profound.

In the authors study patients with clinical signs and symptoms of hypothyroidism were also included, where as in the present study patient with clinically diagnosed DUB with any sign or symptom of hypothyroidism were excluded.

In the present study hypothyroidism was the commonest (i.e., 20%) thyroid dysfunction seen in patient with all the seven different types of menstrual disturbances. In the following table the commonest menstrual disturbances in hypothyroidism is shown in the present study and author's study (***C.D.Doifode et al 2001***).

In the present study hypothyroidism was the commonest (i.e., 20%) thyroid dysfunction seen in patient with all the seven different types of menstrual disturbances. In the following table the commonest menstrual disturbances in hypothyroidism is shown in the present study and author's study (*C.D.Doifode et al 2001*).

Table 13:-

MENSTRUAL PATTERN IN HYPOTHYROID PATIENTS

Bleeding Pattern	**Present Study**		**Author's study (*C.D.Doifode et al 2001*)**
Acyclical Metropathia	5	25%	4
Menorrhagia	8	40%	38
Polymenorrhagia	1	5%	14
Metrorrhagia	0	-	4
Oligomenorrhea	3	15%	-
Polymenorrhea	3	15%	-
Hypomenorrhea	0	-	-
Total Hypothyroid Patients	20		60

The type of menstrual abnormality commonly seen in hypothyroidism was menorrhagia (63.33%) in author's study. Menorrhagia was the commonest menstrual abnormality even in the present study i.e, 40%.

Polymenorrhagia was the next common menstrual abnormality 23.33% in the author's study. Author's study had excluded cases of polymenorrhea. In the present study Polymenorrhea and polymenorrhagia both together was the menstrual abnormality in 20% of hypothyroid cases.

Author had excluded cases of oligomenorrhea. In the present study oligomenorrhea was the menstrual pattern in 15% of hypothyroid patient.

This table shows the type of menstrual abnormality commonly seen in hypothyroidism according to Various authors.

Table 14:- Menorrhagia in Hypothyroidism

Authors	Menorrhagia
E.D.Doifode *et al* 2001	63.3%
Singh *et al* 1990	44.4%
Willansky and Bernard (1989)	100%
Present study	40%

Subclinical hypothyroidism is diagnosed in cases with normal levels of T3 and T4 [low normal levels] and raised TSH levels i.e., (Slightly raised). In the table below cases with menorrhagia who were having subclinical hypothyroidism in the present study were compared with Author's study (***Douglas L et al 1989***).

Table 15:- Subclinical Hypothyroidism in menorrhagic patients.

Study	**Subclinical Hypothyroid Cases in menorrhagic patients**
Author's Study (DouglasL*)* et al 1989)	15
Present Study	6

Subclinical hypothyroidism was seen in 22.3% of cases with menorrhagia in authors study.(Douglas L. *et al*., 1989)

Similarly in present study subclinical hypothyroidism was seen in 18.75% of cases with menorrhagia. The incidence of subclinical hypothyroidism was similar in present study and author's study (***Douglas L. et al 1989***).

In the present study 9 cases of menorrhagia in age group < 20 were studied out of which 2 cases had hypothyroidism. In author's study (***Jayadev Mukherji et al 1986***), 70 cases of menorrhagia cases were studied < 20 years, 5 out of which patients were hypothyroid.

Table 16:- Hypothyroidism in menorrhagia cases < 20 years of age

Study	Subclinical Hypothyroid othyroidism	Hypothyroidism
Author's Study ***(Jayadev mukherji et al) 1986)***	4.2%	2.8%
Present study	11%	11%

In the present study subclinical hypothyroidism was seen in menorrhagia patients (<20year) in 11% of cases. In author's study subclinical hypothyroidism was seen in 4.28%of menorrhagia patients <20 years.

In the present study there were total 19 cases of oligomenorrhea in which 4 cases were from patients <20 years, 7 cases were patients between 21-30 years 7 cases were patients between 31-40 years and 1 case was patient above 40 years.

In the author's study (***Kalyani Mukherjee et al 1983***), 10 cases of oligomenorrhea were taken, age ranging between 25-39 years mean age being (31.7+2.8) years.

Table 17:- Oligomenorrhea and Thyroid dysfunction.

Study	No. of Cases	Hypo thyroid	%	Hyper Thyroid	%	Total % of Thyroid Dysfunction
Author's Study (Kalyani Mukherjee) et al 1983)	10	8	80%			80%
Present study	19	3	15.3%	3	15.3%	30.6%

In author's study there were no cases among oligomenorrhea patients who had hyperthyroidism. In present study 15.3% oligomenorrheic patients were showing hyperthyroidism, 15.3% were having hypothyroidism. Total patients showing thyroid dysfunction in present study is 30.6% in author's study is 80%.

Thyroid dysfunction in relation to oligomenorrhea.

Table 18 : Hypothyroidism in Oligomenorrheic Patients.

	Hypothyroid
Present Study	50%
Lakshmi Singh *et al* 1990	36.3%

The table above shows the relationship of Hypothyroidism to oligomenorrhea in the present study and author's study (Lakshmi Singh *et al* 1990).

Author's study was conducted on infertile patients with menstrual aberrations.

In author's study patients with oligomenorrhea and thyroid dysfunction showed 63.6% of hyperthyroidism and 36.3% of hypothyroidism.

In the present study patients with oligomenorrhea and thyroid dysfunction showed 50% of hyperthyroid cases and 50% of hypothyroid cases. In the present study hyperthyroidism was seen only in cases of oligomenorrhea. In author's study (***Lakshmi singh et al 1990***)hyperthyroidism was seen in 64% of cases with oligomenorrhea.

So in both the present study and author's study (*Lakshmi Singh et al 1990*) oligomenorrhea was the commonest menstrual aberration among hyperthyroid patients..

Table 19 :Oligomenorrhea in Hyperthyroidism

Study	Oligomenorrheic patients
Author's Study	64%
Present Study	100%

Table :20

Signs and symptoms of thyroid dysfunction

Signs & symptoms	No of cases	hypothyroid	Hyperthyroid
Fatigue	18	6	-
Cold intolerance	4	2	-
Heat intolerance	-	-	-
obesity	8	4	-
goiter	2	2	-
Dry skin and hair loss	4	3	-

In our study, most of the patients had easy fatiguability followed by weight gain,dry skin and hair loss, cold intolerance, goiter. None of the patients had tachycardia, bradycardia, delayed tendon reflexes, eye signs,hypertension, heat intolerance,palpitation. A high percentage of women presenting with fatigue,obesity,cold intolerance, dry skin turned out to be hypothyroid when investigated biochemically.

CONCLUSION

- Our study concludes that thyroid dysfunction should be considered as an important etiological factor for menstrual abnormality.
- Thus biochemical evaluation of T3, T4 and TSH estimations should be made mandatory in DUB cases to detect apparent and occult thyroid dysfunction.
- Thyroid function tests should also be done in patients presenting with fatigue,obesity,lethargy in addition to infertility,delayed puberty and recurrent abortions.
- These patients with thyroid dysfunction if given medical treatment avoids necessity of hormonal treatment or surgical intervention.

SUMMARY

100 cases, clinically diagnosed as DUB selected from department of obstetrics and gynecology , Coimbatore medical college hospital, Coimbatore , Tamil nadu over a period of 12 months were studied.

Study was aimed to evaluate and detect thyroid dysfunction in patients with provisional diagnosis of DUB and positive cases i.e., patients showing thyroid dysfunction were referred to physician for further management.

1. In present study the patients belonged to various age groups ranging from below 20 years to 45 years. Maximum number of cases belonged to 31-40 years- 36%.
2. Parity of patients ranged from unmarried -0-5 maximum number of patients with DUB belonged to unmarried group - 25%.
3. Commonest bleeding pattern was menorrhagia (32%).
4. Thyroid dysfunction was noted in 23% of cases (Subclinical hypothyroidism in 13%, Hypothyroidism in 7%, and hyperthyroidism in 3 % of cases).

5. Thyroid dysfunction was commonest in cases with polymenorrhea (37.5%), metropathia (33%), oligomenorrhea (31.5%) and in menorrhagia(25%).
6. Thyroid dysfunction was commonest in age group(31-40 years)
7. Thyroid dysfunction was commonest in nulliparous women (33%).
8. Predominant thyroid dysfunction was hypothyroidism total was 20% among that subclinical hypothyroidism was in 13% of cases.
9. 3% of cases who were hyperthyroid were oligomenorrheic.
10. Subclinical hypothyroidism was maximum among polymenorrheic patients (37.5%) and followed with menorrhagic patients(18.75%).
11. All 23% of cases who had thyroid dysfunction showed abnormal TSH levels 8% of cases with thyroid dysfunction showed abnormal T3 level, 12% of cases with thyroid dysfunction showed abnormal T4 levels. Thus TSH level has maximum sensitivity compared to T3 and T4 levels, in detecting thyroid gland dysfunction.
12. Patients having symptoms like fatigue, increased weight gain, dry skin, cold intolerance have high incidence of hypothyroidism.

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ANNEXURE- I

PROFORMA

NAME : AGE:

HOSPITAL NO: OCCUPATION:

ADDRESS:

SOCIO- ECONOMIC STATUS **:**

CHIEF COMPLAINTS :

HISTORY OF PRESENTING COMPLAINTS :

A*) Bleeding per Vagina :*

Duration :

Interval :

Quantity : Scanty / Moderate /Excessive

H/o Dysmenorrhoea : Yes /No

B) Other complaints

THYROID RELATED COMPLAINTS

HYPOTHYROIDISM(*)

Tiredness / mental lethargy / cold intolerance / weight gain / constipation / menstrual disturbances(menorrhagia).

HYPERTHYROIDISM(*)

Heat intolerance / increased sweating / weight loss despite good appetite /palpitation /emotional lability /diarrhea / decreased fertility or miscarriages / amenorrhea.

MENSTRUAL HISTORY :

Metropathia hemorrhagica : yes /No

Hypomenorrhoea : Yes /No

Menorrhagia : Yes /No

Metrorrhagia : Yes /No

Oligomenorrhoea : Yes /No

Polymenorrhagia : Yes /No

Polymenorrhoea : Yes /No

Age of attainment of menarche:

Previous Menstrual cycles:

- Duration of Cycles :
- Amount of flow :
- Duration of flow :
- Associated dysmenorrhoea:

Date of last menstrual period :

OBSTETRIC HISTORY :

Married Since : Para : Living : Abortion :

Last Delivery:

Contraception :OCP / IUCD / BARRIER / NO

Type of Deliveries: Tubectomy : Yes / No

PAST HISTORY :

DM / HT

TB / Bronchial asthma/ RHD/Blood transfusion / Any operations

Drug intake (thyroxine / antithyroid drugs) or any other drugs.

FAMILY HISTORY :

Thyroid disorders

Any cancer

PERSONAL HISTORY :

Diet : Appetite: Bowels:

Micturation: Sleep:

EXAMINATION OF PATIENT:

General Condition: Nutritional Status:

Anaemia / pedal edema / clubbing / lymphadenopathy .

CVS :

R S :

Pulse rate

Blood Pressure

PER ABDOMEN :

Operative scar : Present / Absent

Engorged vein : Present / Absent

Ascites : Present / Absent

Any enlargement of

Liver / Spleen : Palpable / Non Palpable

PER SPECULUM EXAMINATION:

Vagina :

Cervix :

Bleeding : Present / Absent

PER VAGINAL EXAMINATION:

Cervix : Normal / Flush with vault

Uterus : Anteverted / Retroverted

Normal size / Bulky/ smaller

Soft / Firm / Hard

Mobile / Fixed

Tender / Non Tender

Tenderness in fornix : Present / Absent

Uterocervical length :

Per rectal Examination :

THYROID EXAMINATION

Neck examination : gland enlarged / not

HYPOTHYRIODISM

Bradycardia /Cold extremities /dry skin & hair /periorbital puffiness /horse voice/delayed relaxation phase of ankle jerk/obesity/fatigue

HYPERTHYROIDISM

Tachycardia / warm and moist palms /eye signs / pretibial myxedema / tremor/heat intolerance/palpitation/weight loss/hypertension .

INVESTIGATIONS :

- Hb % RBS (mgs%):

- Urine -Albumin: Sugar:

Microscopy:

- BT : CT:

Thyroid Function Test

T3

T4

TSH

***Impression*: euthyroid / hypothyroid / hyperthyroid /subclinical hypothyroidism**.

IMAGING:

Pelvic USG

PAP SMEAR

Histopathology of endometrium.

ANNEXURE – II

VOLUNTEER'S CONSENT FORM

This study has been explained to me and I understand:

a)What the study involves

b)That refusal to participate will not affect my treatment in any way.

c)That I may withdraw at any time.

I therefore agree to take part in this study.

Signature of the subject .....

Full Name : .....

Date :.....

Full address :

I HAVE BEEN PRESENT WHILE THE PROCEDURE HAS BEEN EXPLAINED TO THE SUBJECT AND I HAVE WITNESSED HIS / HER CONSENT TO TAKE PART.

Signature of the witness

(The witness should be a person NOT connected with the study)

Full Name :

Date : .....

Full address :

KEY TO MASTER CHART

Um	-	unmarried
LMP	–	last menstrual period
irre	–	irregular period
Hypo thy	–	hypothyroid
Sub.hypo	–	subclinical hypothyroid
Hyper	-	hyperthyroidism
P	-	present

MASTER CHART

S.NO	HOSP.NO	DATE	NAME	AGE	**PARITY**	**INTERVAL**	Quantity	duration	LMP	TYPE OF BLEEDING	T3	T4	TSH	Euthyroid	hypo thy	sub.hypo	hyper
1	69188	11/16/2012	VALLIYAMMAL	19	um	38	scanty	2	19	oligomenorrhoea	99	8.4	1.88	p			
2	69163	11/16/2012	PALANIAMMAL	30	5	28	excessive	5	4	menorrhagia	94	6.7	1.57				
3	69160	11/16/2012	GANOJEYAM	**45**	**3**	**30**	**excessive**	**7**	**25**	**menorrhagia**	**61**	**2.1**	**110**		**p**		
4	70008	11/20/2012	MYELATHAL	33	4	30	excessive	6	20	menorrhagia	92	7.1	1.22	p			
5	70811	11/23/2012	SIVABAGYAM	**45**	**5**	**20**	**moderate**	**4**	**10**	**polymenorrhoea**	**88**	**5.8**	**9.58**			**p**	
6	71665	11/27/2012	SURABHI	40	3	30	excessive	7	10	menorrhagia	158	10.3	1.33	p			
7	71633	11/27/2012	DHANABACKIYAM	25	2	20	excessive	8	10	polymenorrhagia	144	8.8	3.73	p			
8	69985	11/27/2012	SAVITHRI	**40**	**3**	**30**	**excessive**	**7**	**14**	**menorrhagia**	**117**	**9.9**	**6.13**			**p**	
9	72305	11/30/2012	JEEVARATHINAM	**42**	**2**	**35**	**excessive**	**8**	**13**	**acyclical(MPH)**	**40**	**5.2**	**11.6**		**p**		
10	73153	12/4/2012	MYELATHAL V	30	3	15	excessive	8	20	polymenorrhagia	114	10.9	2.8	p			
11	78239	12/28/2012	SELVI	45	1	15	excessive	6	3	polymennorhagia	92	6.2	2.54	p			
12	479	1/11/2013	JAGADEESHWARI	28	2	20	excessive	8	10	polymennorhagia	115	8	3.08	p			
13	70059	2/19/2013	PAPATHY	30	2	20	excessive	15	20	polymennorhagia	106	8.3	3.68	p			
14	740053	2/5/2013	MAHARAJALAKSHMI	40	5	20	excessive	8	15	polymennorhagia	160	10.1	2.52				

15	749323	2/8/2013	CHANDRA	40	4	30	excessive	8	20	menorrhagia	117	9.3	1.7	p			
16	749852	2/8/2013	VALMANI	45	3	20	excessive	9	8	polymenorrhagia	116	6.9	2.7	p			
17	757284	2/12/2013	SELVI	**35**	**4**	**25**	**excessive**	**7**	**18**	**menorrhagia**	**70**	**7.5**	**13**			**p**	
18	768952	2/15/2013	PADMAVATHY	30	4	24	excessive	6	1	menorrhagia	141	12.7	2.43	p			
19	14047	3/8/2013	THANGAMANI	21	1	30	excessive	10	15	menorrhagia	133	5.7	1.14	p			
20	14826	3/8/2013	SHANTHAMANI	35	5	90	excessive	7	60	acyclical(MPH)	88	9.4	1.24	p			
21	14859	3/8/2013	LAKSHMI	30	4	60	excessive	10	25	acyclical(MPH)	145	8.1	2.96	p			
22	14064	3/19/2013	RATHNA	**35**	**3**	**25**	**excessive**	**10**	**5**	**menorrhagia**	**111**	**8.3**	**15.6**			**p**	
23	16429	3/22/2013	VIJAYALAKSHMI	23	2	30	excessive	8	10	menorrhagia	100	8.3	4.39	p			
24	15730	3/22/2013	RAJESWARI	**38**	**3**	**20**	**excessive**	**10**	**15**	**polymenorrhagia**	**88**	**7.6**	**12.5**			**p**	
25	201041	3/19/2013	JEYAMANI	25	5	45	excessive	10	7	acyclical(MPH)	81	5.3	1.69	p			
26	207387	3/22/2013	MAHESWARI	14	um	60	excessive	10	90	acyclical(MPH)	100	7.5	2.1	p			
27	207431	3/22/2013	HASEENA BANU	**18**	**um**	**30**	**excessive**	**9**	**15**	**menorrhagia**	**112**	**6.9**	**15.9**			**p**	
28	221304	3/29/2013	VASANTHI	**15**	**um**	**45**	**scanty**	**3**	**35**	**oligomenorrhoea**	**50**	**0.3**	**110**		**p**		
29	221331	3/29/2013	MAHESHWARI	40	5	90	excessive	15	30	acyclical	113	9.4	1.14	p			
30	18804	4/2/2013	VIJAYALAKSHMI	38	3	15	excessive	6	6	polymenorrhagia	112	11	3.9	p			
31	23544	4/23/2013	VIJAYALAKSHMI	**17**	**um**	**45**	**excessive**	**15**	**18**	**acyclical(MPH)**	**133**	**5.7**	**15.5**			**p**	
32	242277	4/30/2013	SAROJA	16	um	30	excessive	8	20	menorrhagia	124	8	2.24	P			
33	25017	4/30/2013	SELVI	45	4	45	excessive	20	15	acyclical(MPH)	90	8.6	2.35	p			
34	229551	4/2/2013	KOKILA	15	um	30	excessive	8	20	menorrhagia	86	7.5	1.11	p			
35	201011	4/2/2013	KALAIVANI	18	um	90	scanty	2	20	oligomenorrhoea	176	9.1	0.83	p			
36	520954	4/2/2013	ANNAPOORANI	**30**	**4**	**45**	**scanty**	**2**	**15**	**oligomenorrhoea**	**194**	**12**	**0.12**				**p**

37	233638	4/5/2013	MUTHURANI	**15**	**um**	**30**	**heavy**	**15**	**20**	**menorrhagia**	**56**	**0.5**	**150**		**p**		
38	233750	4/5/2013	SUGANTHI	42	3	20	excessive	6	18	polymenorrhagia	94	8	3.21	p			
39	27165	5/10/2013	THAI	41	2	45	scanty	2	5	oligomenorrhoea	158	8.3	1.49	p			
40	28013	5/14/2013	SHANTHI	35	2	20	moderate	5	12	polymenorrhoea	116	8.6	1.86	p			
41	30297	5/24/2013	MAHALAKSHMI	24	5	35	excessive	15	15	acyclical(MPH)	80	7.8	1.62	p			
42	28140	24-May	NEELA	15	um	45	excessive	3	45	acyclical(MPH)	163	11.7	1.29	p			
43	31840	5/31/2013	SAROJA	45	3	20	excessive	9	8	polymenorrhagia	89	7.5	4.25	p			
44	286137	5/3/2013	SUMATHI	**32**	**4**	**45**	**excessive**	**8**	**15**	**acyclical(MPH)**	**143**	**9.1**	**13.3**			**p**	
45	280238	5/3/2013	RANI	30	2	30	excessive	8	10	menorrhagia	97	7.1	2.13	p			
46	287682	5/3/2013	VANI	**25**	**2**	**30**	**excessive**	**8**	**15**	**menorrhagia**	**119**	**10**	**5.79**			**p**	
47	293258	5/7/2013	KASTHURI THILAGA	**24**	**2**	**30**	**scanty**	**1**	**20**	**oligomenorrhoea**	**294**	**12**	**0.12**				**p**
48	293293	5/7/2013	DHANALAKSHMI	30	3	20	excessive	12	20	polymenorrhagia	136	11.1	3.3	p			
49	33687	6/5/2013	RUKMANI	36	3	18	excessive	4	10	polymenorrhagia	134	9	2.51	p			
50	33688	6/18/2013	SULOCHANA	32	2	45	scanty	1	30	oligomenorrhoea	188	12.1	3.24	p			
51	37598	6/25/2013	SUBBULAKSHMI	29	3	35	scanty	2	13	oligomenorrhoea	131	9	1.86	p			
52	38282	6/28/2013	MARIAMMAL	15	um	30	excessive	8	4	menorrhagia	123	7.6	1.96	p			
53	34547	6/11/2013	VIJAYALAKSHMI	**35**	**2**	**30**	**excessive**	**10**	**15**	**menorrhagia**	**90**	**9**	**7.5**			**p**	
54	34078	6/11/2013	LATHA	32	1	45	scanty	2	35	oligomenorrhoea	111	7.1	1.99	p			
55	34104	6/11/2013	VASANTHA	35	2	20	excessive	8	15	polymenorrhagia	124	9	3.3	p			
56	35395	6/15/2013	NEELAVATHY	45	4	30	excessive	10	12	menorrhagia	133	10	1.29	p			
57	37798	6/26/2013	LATHA	16	um	25	excessive	8	90	acyclical(MPH)	109	8	2.87	p			
58	36314	6/26/2013	KALIYAMMAL	**15**	**um**	**90**	**excessive**	**10**	**90**	**acyclical(MPH)**	**9**	**0.7**	**150**		**p**		

59	38281	6/28/2013	PALANIAMMAL	**35**	**3**	**60**	**excessive**	**10**	**15**	**acyclical(MPH)**	**20**	**0.8**	**100**				
60	39087	7/1/2013	LAKSHMI	19	um	30	scanty	1	20	hypomenorrhoea	149	11.3	0.4	p			
61	40580	7/5/2013	MANJULA	40	2	20	excessive	5	5	polymenorrhagia	116	10.3	3.3	p			
62	41333	7/5/2013	MARIAMMAL	25	um	35	scanty	1	30	oligomenorrhoea	122	8.1	1.27	p			
63	41327	7/8/2013	AMSAVENI	30	2	30	excessive	8	25	menorrhagia	144	8.9	1.98	p			
64	498133	7/23/2013	SELVI	35	3	irre	scanty	2	10	metrorrhagia	111	7	2.31	p			
65	45368	7/26/2013	DHANALAKSHMI	30	2	30	scanty	1	15	hypomenorrhoea	120	9.2	1.74	p			
66	35646	7/1/2013	LAKSHMI	**40**	**2**	**20**	**excessive**	**8**	**10**	**polymenorrhoea**	**139**	**9.3**	**6.05**			**p**	
67	38466	7/1/2013	REVATHI	36	3	30	excessive	8	15	menorrhagia	141	9	1.91	p			
68	38282	7/2/2013	MARIYAMMAL	**19**	**um**	**90**	**scanty**	**5**	**90**	**oligomenorrhoea**	**95**	**6**	**11.6**			**p**	
69	38465	7/3/2013	SELVI	15	um	20	excessive	8	5	polymenorrhoea	118	28	2.06	p			
70	38654	7/6/2013	SANTHA	40	4	irre	scanty	3	8	metrorrhagia	138	9.3	3.22	p			
71	38685	7/8/2013	SUGANTHI	16	um	20	moderate	5	18	polymenorrhoea	126	10.9	1.76	p			
72	48328	8/9/2013	RENUGADEVI	30	1	30	scanty	1	15	hypomenorrhoea	130	10.2	1.62	p			
73	534258	8/2/2013	KALYANI	**23**	**0**	**90**	**moderate**	**4**	**4**	**oligomenorrhoea**	**16**	**0.6**	**150**		**p**		
74	534385	8/2/2013	SHANMUGAPRIYA	35	2	40	moderate	2	15	oligomenorrhoea	120	7.5	1.64	p			
75	515942	8/2/2013	JEYAKKODI	35	1	33	scanty	1	19	hypomenorrhoea	114	8.2	4.7	p			
76	544298	8/6/2013	SOWJATH	26	0	40	scanty	2	40	oligomenorrhoea	135	6.4	1.69	p			
77	545826	8/6/2013	USHA	21	0	30	scanty	1	15	hypomenorrhoea	118	7.4	1.66	p			
78	544547	8/6/2013	CHITRA	36	1	20	excessive	8	7	polymenorrhagia	121	10.4	1.65	p			
79	546008	8/6/2013	MATHU	35	3	45	scanty	1	15	oligomenorrhoea	114	8	4.5	p			
80	577825	8/23/2013	MARAGATHAM	17	um	30	excessive	5	15	menorrhagia	182	9.6	5.28	p			

81	585725	8/20/2013	MEENA	**35**	**1**	**40**	**scanty**	**2**	**8**	**oligomenorrhoea**	**225**	**13**	**0.03**				**p**
82	53056	9/3/2013	SAMEENA	38	2	30	excessive	7	10	menorrhagia	127	6.8	3.58	p			
83	52516	9/6/2013	RUKUMANI	32	3	60	excessive	6	1	acyclical(MPH)	153	7.9	4.29	p			
84	52112	9/6/2013	JEYAMANI	28	0	50	scanty	1	25	oligomenorrhoea	160	7.6	4.22	p			
85	56772	9/24/2013	DHANALAKSHMI	**35**	**0**	**20**	**moderate**	**5**	**15**	**polymenorrhoea**	**149**	**4.6**	**26.2**			**p**	
86	567227	9/24/2013	THILSATH	20	um	30	excessive	8	10	menorrhagia	175	8	4.57	p			
87	608361	9/3/2013	POOMANI	23	um	30	excessive	8	14	menorrhagia	92	7.25	1.22	p			
88	600929	9/3/2013	CHITARA	28	0	28	excessive	5	10	menorrhagia	114	6.9	2.47	p			
89	614741	9/6/2013	DEVI	45	3	20	excessive	10	15	polymenorrhagia	144	8.8	2.4	p			
90	622264	9/10/2013	RABI	38	2	50	scanty	1	35	oligomenorrhoea	117	8.3	2.8	p			
91	637266	9/17/2013	GEETHA	40	3	15	excessive	5	20	polymenorrhagia	106	9	1.22	p			
92	60820	10/8/2013	LAKSHMI	32	1	30	excessive	6	20	menorrhagia	141	10.2	2.43	p			
93	60802	10/8/2013	FATHIMA	40	3	55	scanty	2	40	oligomenorrhoea	158	7.1	1.33	p			
94	60849	10/8/2013	PARVATHI	29	1	30	excessive	8	10	menorrhagia	117	7.2	1.57	p			
95	61578	10/22/2013	SANGEETHA	17	um	30	excessive	7	15	menorrhagia	88	7.1	2.47	p			
96	705002	10/18/2013	SHARMILA	30	2	28	excessive	7	10	menorrhagia	160	10.1	2.54	p			
97	705055	10/18/2013	DEIVA	15	um	26	excessive	5	15	menorrhagia	106	7.6	3.73	p			
98	719129	10/25/2013	AABISHA	20	um	irre	scanty	1	5	metrorrhagia	144	6.9	1.33	p			
99	713186	10/22/2013	NANDHINI	18	um	20	moderate	5	10	polymenorrhoea	166	7.6	4.1	p			
100	712056	10/22/2013	JEYANTHI	30	2	15	moderate	2	10	polymenorrhoea	105	8.3	2.3	p			